EXHIBIT 11

In the Matter Of:

K.C., ET AL

-v-

INDIVIDUAL MEMBERS OF MEDICAL LICENSING BOARD OF INDIANA, ET AL

Jack Turban, M.D., MHS

May 19, 2023

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

K.C., et al.,)
)
Plaintiffs,)
)
-v-) CASE NO.
) 1:23-cv-00595-JPH-KMB
THE INDIVIDUAL MEMBERS OF)
THE MEDICAL LICENSING BOARD)
OF INDIANA, in their official)
capacities, et al.,)
)
Defendants.)

The deposition upon oral examination of JACK TURBAN, M.D., MHS, a witness produced and remotely sworn before me, Debbi S. Austin, RMR, CRR, Notary Public in and for the County of Hendricks, State of Indiana, taken on behalf of the Defendants via Zoom videoconference on May 19, 2023, at 12:01 p.m., pursuant to the Federal Rules of Civil Procedure.

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THE REPORTER: My name is Debbi Austin, an associate of Stewart Richardson & Associates, One Indiana Square, Suite 2425, Indianapolis, Indiana. Today's date is May 19, 2023. The time is 12:01 p.m. Eastern Standard Time. This deposition is being held via Zoom videoconference. The deponent is Jack Turban, M.D., MHS.

Will counsel please identify themselves and any persons present with you for the record.

MR. STRANGIO: Good morning. This is Chase Strangio from the ACLU. I am here in San Francisco with the witness. With me on Zoom, also for the plaintiffs, are Ken Falk and Gavin Rose from ACLU of Indiana and Harper Seldin from ACLU.

MR. BARTA: Good morning. You have James Barta here for the defendants. Joined on separate screens is my colleague, Razi Lane, and with me in the room is John Vastag, our summer law clerk.

JACK TURBAN, M.D., MHS,

having been first duly sworn to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

EXAMINATION

BY MR. BARTA:

Q Great. Well, good morning, Dr. Turban again. I'm

going to be taking your deposition today, and so we just have a few preliminary matters to get through.

Have you given -- taken -- given a deposition before?

A Yes.

Q Okay. So you understand the format is I'll ask questions and you'll get to answer them?

A Yes.

Q Okay. And if you don't understand any of my questions, please ask for clarification. Can you do that?

A Yes.

Q And both of us will try to do the best to give verbal answers, not gestures, which don't show up well on the transcript.

A Understood.

Q And, you know, I will certainly do my best, which can sometimes be a little tricky with Zoom, to not speak over you and would appreciate if you could do the same for me as we try to get a clean record. Okay?

A Yes.

Q All right. Is there any reason today you cannot understand my questions?

A No.

Q Any reason you can't answer them truthfully and accurately?
A No.
Q What did you do to prepare for today's deposition?
A I met with the plaintiff's attorneys and went through my declaration.
Q Did you read any other documents?
A I read the complaint in the case, and I think that's it.
Q Did you speak with anyone other than the plaintiffs' attorneys?
A No.
Q And just to -- is anyone else in the room with you besides Chase?
A No.
Q Great. And I think you -- Chase mentioned, you have your declaration in front of you; that's right?
A I do.
Q Any other documents?
A No.
MR. BARTA: Shawn, I'd like to bring up Dr. Turban's declaration as Exhibit 1, please.
(Deposition Exhibit 1 marked.)
Q Dr. Turban, is this a copy of the declaration you filed in this case?
A From what I can see on the first page, yes.
Q And you've been retained as an expert in this case?
A Yes.
Q Who wrote this declaration?
A I wrote it.
Q Did anyone else assist you?
A Plaintiffs' lawyers read it and asked for clarification at points.
Q Did you consult with anyone about the declaration?
A Other than working with the plaintiffs' attorneys, no.
Q Do you still hold the opinions in the declaration?
A Yes.
Q And this declaration provides a complete statement of your -- the opinions you intend to express?
A Unless anything else comes up, say, in responses to other experts, yes.
Q Okay. Is there any way in which your declaration is no longer accurate?
A Not that I'm aware of.
Q And have there been any changes to this CV you submitted?
A Let me look at the date. Nothing substantial. I may have had more academic talks accepted, but nothing substantially different.
Q Okay. And I see in paragraph 3 of your declaration you said you reviewed Indiana Senate Enrolled Act 480, the materials cited in your bibliography, in preparing this declaration; is that right?
A Yes.
Q Did you review anything else not listed here?
A In there it notes I also relied on my years of research and other experience, so some of the general opinions may have been based on additional research that wasn't explicitly cited.
Q But you can't think of any other documents you reviewed?
A No, nothing specific.
Q Okay.
MR. BARTA: I think you can take down the declaration.
Q I saw from your CV you went to medical school at Yale; is that right?
A Correct.
Q And then you did your residency at Massachusetts General?
A It's the Massachusetts General Hospital McLean Hospital integrated program, yes.
Q Okay. What other training did you do after that?
A I completed my child and adolescent psychiatry fellowship at Stanford. And while at Yale, I also completed a master's of health sciences research.
Q When did your fellowship finish?
A I believe 2022.
Q Do you remember when in 2022?
A Like the month, I don't remember the specific month.
Q And how -- so do you know approximately how long you've been in independent practice?
MR. STRANGIO: Object to form.
A So I've been at UCSF for my current role since September.
Q And what do you do now?
A I'm an assistant professor of child and adolescent psychiatry and affiliate faculty at the Institute for Health Policy Studies. I direct the UCSF gender psychiatry program. I'm also an attending psychiatrist in the eating disorders program and the adult LGBT psychiatry program.
Q A lot of different hats.
A And then I also do research, studying the determinants of mental health for transgender and gender diverse youth.
Q So you mentioned a few moments ago that you relied

on clinical experience; right?
A Yes.
Q What clinical experience do you have in mind?
A My residency, fellowship, and time working at UCSF.
Q In any of those roles, did you provide psychiatric services to minors?
MR. STRANGIO: Object to form.
A Yes.
Q Which roles?
A All three of those.
Q What kind of services did you provide?
A It would take a long time to list all of them. Would you --
Q Let me see if I can be more specific. So did you treat minors for gender dysphoria?
A Yes.
Q Do you know how many -- approximately how many?
A It's hard because I don't keep a running count. Maybe around a hundred.
Q Would you have treated them at UCSF?
A At UCSF, also at Stanford, and at McLean Hospital.
Q In treating minors for gender dysphoria, did you follow any specific guidelines or standards of care?
A It would depend on what I was treating them for.

Q What was sort of the range of treatments you offered to minors with gender dysphoria?
MR. STRANGIO: Object to form.
A I've taken care of them on inpatient psychiatric units and partial hospitalization programs and in outpatient clinics ranging from depression clinic to clinics that were specifically focused on gender dysphoria.
Q You did -- did you evaluate any of the minors involved in this case?
MR. STRANGIO: Object to form.
A I did not. At least not that I'm aware of, unless they were at one of those hospitals at some point.
Q So I think you also mentioned you've relied on your research.
A Uh-huh. Yes.
Q What research do you have in mind?
A All of my research is outlined on my CV.
Q Okay. Was all of the relevant research cited in your bibliography?
A Are you asking about my own research or are you asking about --
Q Your own research.
A There's additional research that I've done in this area that was not cited in the declaration.

Q Do you believe that additional research is relevant to the opinions you offer here?
MR. STRANGIO: Object to form.
A Potentially, depending on if you wanted more detailed information on any of these points. The declaration was meant to be an overview to summarize. But if you wanted more detailed information, that's when those papers may become relevant.
Q Okay. Understood.
So you have testified as an expert in other cases; is that right?
A I've testified at trial in just one other case.
Q Which one is that?
A That was Brandt versus Rutledge that I believe is cited in my declaration.
MR. BARTA: I'd like to bring up as Exhibit 2 Jack Turban's deposition in the Alabama case.
(Deposition Exhibit 2 marked.)
A Do you mean Arkansas?
Q Sorry, Arkansas. Thank you.
So this is -- you testified by deposition in the Arkansas case; is that right?
A Correct.
Q Does this look like the front page of your

transcript in that case?
A Yes, it does.
Q Were the answers you gave in your deposition there truthful and accurate?
A Yes.
Q And were you given the chance to review the transcript afterwards and make any corrections?
A Yes.
MR. BARTA: You can take down that exhibit.
I'd next like to introduce as Exhibit 3 the trial testimony of Jack Turban from the Arkansas case.
(Deposition Exhibit 3 marked.)
Q Does this look like the transcript at the trial testimony you gave in Arkansas?
A From what I can tell from this first page, yes.
Q And in your answers in that testimony, they were truthful and accurate as well?
A Yes.
MR. STRANGIO: James, do you want to just scroll through so we can just -- I mean, I don't know if you're planning to use it more than this, but just to --
MR. BARTA: Happy to scroll through it if you would like.

MR. STRANGIO: I mean, we don't need to see the whole thing. I just want to be --

MR. BARTA: All right. Would you like me to go any further?

THE WITNESS: I think it's helpful to see my name. Then we know it's the right part of the trial transcript.

MR. STRANGIO: That's good, that's good. I just what I wanted to see -- thank you.

MR. BARTA: Thank you, Shawn. You can take that exhibit down.

BY MR. BARTA:

Q So turning back to your declaration, Dr. Turban, you discuss the treatment of adolescents with gender dysphoria; right?

A Yes.

Q So I didn't see where you mention what gender identity is. What is that?

MR. STRANGIO: Object to form.

A Gender identity is one's psychological understanding of their own gender.

Q Are there different dimensions to gender identity?

MR. STRANGIO: Object to form.

A What do you mean by "dimensions"?

Q I think I've seen literature describe it as there

can be dimensions like felt gender, gender conformity, and so on. Do you think there are different dimensions to it?

MR. STRANGIO: Object to form.

A I think I need your definition of dimensions of gender identity to know exactly how to answer.

Q Okay. All right, so how is gender identity different from sex?

MR. STRANGIO: Object to form.

A So sex is a term that we try to avoid in the scientific literature because it is broad and heterogenous and doesn't have a precise definition. And you'll see it refer to different things. So, for instance, it may refer to one's sex chromosomes, so whether they're XX or XY, or a different combination thereof. Sometimes it can be used to refer to external genitalia. Sometimes it could be used to refer to gonads, like testes or ovaries. So you can see there are many different things that sex could mean.

And then gender identity specifically refers, as I had mentioned earlier, to one's psychological understanding of their gender.

Q So if gender identity is psychological, is sex a biological concept?

MR. STRANGIO: Object to form.

A Can you repeat the question.

Q Is sex a biological concept?

MR. STRANGIO: Object to form.

A That seems different than your last question. Is the question just is sex a biological concept?

Q Yes.

A Yes. Again, an imprecise one that we don't use frequently as experts, but all of those things I've mentioned, like sex chromosomes, describing external genitalia, gonads, et cetera, those are biological concepts.

Q How do you tell what someone's gender identity is?

MR. STRANGIO: Object to form.

A Because it's their psychological understanding of themselves. The best way to know that is them reporting to you and describing their gender identity.

Q And that's the same for both adults and minors?

MR. STRANGIO: Object to form.

A Yes.

Q Can someone ever be mistaken about their gender identity?

MR. STRANGIO: Object to form.

A What do you mean by "mistaken about their gender

identity"?

Q So you said -- let me try rephrasing that.

So you say gender identity is the psychological self-understanding or --

MR. STRANGIO: Object to form.

A Of one's gender, yes.

Q Of one's gender. Can someone not fully appreciate what their self-understanding is?

MR. STRANGIO: Object to form.

A It could be theoretically possible that one wouldn't have the language to describe their gender identity and thus wouldn't be able to describe it to you.

Q Can someone's conscious understanding of their gender identity be different from a subconscious understanding?

MR. STRANGIO: Object to form.

A You're getting pretty deep into more Freudian concepts, but generally I can't think of a way to easily know one's unconscious or subconscious sense of their gender identity.

Q Is there any test such as a blood or imaging test that shows gender identity?

A No.

Q Is it possible to have a known error rate in

reporting gender identity without such a test?

MR. STRANGIO: Object to form.

A There are different definitions of error rate in different areas of statistics in medicine. Can you give your definition of error rate?

Q Well, let me try asking it a different way. Can -- if there's no objective test, is there any way to determine whether someone's self-reporting of gender identity is mistaken?

MR. STRANGIO: Object to form.

A So the gold standard way of establishing one's gender identity is to hear their explanation of it. If you're thinking of the clinical diagnosis of gender dysphoria that we talk about throughout this case when we're talking about medical interventions, again, the gold standard is to use the DSM-based criteria.

So if you were to want to look at something like, let's say, a false positive or a false negative error rate, you would be comparing to the gold standard that is using the DSM criteria.

Q But if we're talking just about gender identity, can there be a false positive or false negative rate?

MR. STRANGIO: Object to form.

A It would depend. So when you're talking about false positives or false negatives, that is usually talking about different diagnostic tests.

So to give you an example, let's say you developed a novel test for having elevated cholesterol that was a different biomarker. You would test a bunch of people with your new test, and then you would test with the gold standard that's measuring the cholesterol level. And then you would calculate your false positive and false negative rates by looking at the percentage of people who are detected as having that condition or not having that condition with your new test and compare that to your gold standard, which is the cholesterol level.

So in determining someone's gender identity, the gold standard is a clinical interview and asking them their gender identity, so that is the gold standard. So you wouldn't really be able to calculate a false positive or false negative rate.

Q And I think I understand. So is gender identity able to change?

A So gender identity has a strong biological basis. We can talk about the research that establishes that, if you'd like. But the way in which people

ascribe language to their gender identity or the way that they describe it can certainly change over time.

Q So I guess I'm maybe not quite following that answer because I thought you said that since the gold standard is self-reporting, it seems like if someone's description of it changes over time, gender identity can change over time; is that right?

MR. STRANGIO: Object to form.

A Not necessarily. So your -- their description of their gender identity could change over time, but it also has a strong biological basis.

Q So you're saying -- are you saying that gender identity is always fixed?

A If you're talking about, like, the part of gender identity that you can see, right, which is what someone provides language around, that language that they ascribe to their gender identity can change over time.

Q I guess you seem to be talking about gender identity separate from the language someone uses to describe it. Is that right? Do you draw a distinction?

MR. STRANGIO: Object to form.

A Well, your gender identity, which we know has a biological basis, is, right, a psychological construct that lives in your mind. We can't, like, directly see it. So you have to add language to it to -- that's how you pro understanding it, through the language that somebody uses to describe it.

Q So are you saying that your gender identity is fixed from birth, but only the language that someone uses to describe it changes?

MR. STRANGIO: Object to form.

A It depends on kind of how you're using the words "gender identity," but I think you have the general concept correct, that there is a biological basis that creates a psychological understanding and a way of being in one's brain that is their gender identity. But the way they describe that over time can change.

In the same way that, let's say, you know, you experience sadness, the language you use to describe what sadness feels like could be different over time.

Q So how do you know that gender identity does not change over time?

MR. STRANGIO: Object to form.

A I'm not sure I understand the question.

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Q So I thought you said that gender identity does not change over time, but only the language someone uses to describe it changes.

A Correct.

Q How do you know gender identity does not change over time?

A So that is based on the research we have showing that there's a strong biological component to it.

Q What is the biological component?

A So the way that that's been looked at in the past and that we often do in psychiatric conditions are through twin studies. So this similarly has been done for things like autism or schizophrenia before we knew whether or not that these were experiences that people had based on kind of innate, inherited genetic factors versus environmental factors.

So the way you do those studies is you take a group of people with a condition, so in this case people with trans identities who happen to be twins. Some of those twins are going to be monozygotic twins, or identical twins, twins that have the same DNA. Some of those twins are going to be fraternal twins who have different DNA. And then if you think about how twins are raised, generally they have the same environment, right.

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And so that study allows you to separate out the impact of genetic factors versus the impact of environmental factors. And when they've done that with trans identity, they see there's, like, a 70 percent genetic component to trans identity. And then similar studies have been done in autism and schizophrenia, and that's how we -- one of the main ways that we come to find that things have a biological component.

Q Has anyone identified what in the genetic code is -- contributes to gender identity?

MR. STRANGIO: Object to form.

A It's similar to autism and schizophrenia in that way in that there have been genetic studies where they've identified potential genes, but they haven't found, like, a single genetic determinant.

Q So I hear sometimes the term "fluid" used in connection with gender identity. What is that?

MR. STRANGIO: Object to form.

A It's not quite a scientific term, but when I've seen it used, it generally seems to be referring to people describing their gender identity with new language. So, for instance, I certainly had patients who maybe used the words trans man to describe their gender identity, and then as they

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learned more language and that they might apply different language to their identity later and understand it differently through language and might have, like, a nonbinary identity or add additional detail or descriptors to their gender identity.

Q So you've used the term "transgender." What do you mean by that term?

A So I should point out that it's used differently in different contexts. So some people use the word transgender to mean somebody whose gender identity is, say, like the opposite, for lack of a better terminology, from their -- what's on their birth certificate. So if my birth certificate said male, but I had a female gender identity, I might identify as transgender or transgender woman.

Some people use it just to mean kind of that binary gender identity. Others use it in a broader sense to also include people who have other gender identities, like gender nonbinary identities.

Q How do you use -- what is your definition you're using?

A I've probably used it different ways in different papers, depending on, honestly, who's reviewing the paper. Because you end up using the definition

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that they use. But usually any time that you use that word, you've defined it in the paper since it's important to be clear which definition you're using.

Q How are you defining it in your declaration?

MR. STRANGIO: Object to form.

A Well, because most of my declaration was focused on gender dysphoria, so I'm trying to find where I used the word "transgender."

Is there a specific sentence where you were wondering?

Q Not a specific sentence. I'm just wondering how you're using it when we're talking now, I suppose.

A Yeah, looking at the declaration, I think often when I use that word, I'm using it based -- because that's the language that was used in the author's -- by the authors of the paper I'm discussing. So we can go through if there were specific statements I just made or if there are specific instances in the declaration, I can clarify.

Q So it may depend on the context?

A Correct.

Q I also hear the term "gender incongruent." What is that?

A Gender incongruence is a diagnosis from the ICD 11. So it is a term that describes when somebody's gender identity is incongruent with or different from their sex assigned at birth, which is what's on their birth certificate.

Q How does that differ from just -- from being transgender?

MR. STRANGIO: Object to form.

A I'll have to look up the exact criteria of the ICD because here clinically in the U.S. when we're using a medical diagnosis, we use the DSM diagnoses, and there we have gender dysphoria. But if you'd like, we could pull up the ICD and see if there's a way in which it's different.

Q I don't think we need to do that. I'm just trying to understand.

So when you mentioned gender dysphoria, what is gender dysphoria?

A So gender dysphoria is the diagnosis in the DSM. The latest edition is the fifth edition, text revision. And there are two different diagnoses. There's gender dysphoria in children, which is a diagnosis that can apply to youth who have not yet reached puberty.

So in psychiatry when we say "child," we mean

a minor who's not yet reached puberty. And when we say adolescent, we mean someone who has reached puberty but is not yet an adult. So there's a set of criteria for gender dysphoria in children, and then there's another set of criteria for gender dysphoria in adolescence and adulthood.

And to kind of give you an overview or summary, what will be relevant for most of this is going to be adolescence or adulthood, because those are the -- that's the diagnosis where a gender-affirming medical intervention might be relevant since prepubertal children don't receive interventions.

(Brief interruption.)

A So there, again, are those two sets of criteria. Children refers to prepubertal children who aren't candidates for gender-affirming medical interventions under current guidelines. The set of criteria for adolescents and adults are what is relevant for considering gender-affirming medical interventions.

And generally that diagnosis is when you have a gender identity that is different from your sex assigned at birth and that that incongruence leads to clinically significant impairment and social,

occupational, or other functioning, and has been present for at least six months.

Q That's helpful. Thank you.

I guess that does bring up one question. Is there -- so you say you need clinically significant distress, is that the term you used?

A Correct.

Q Does that mean not everyone who is transgender experiences gender dysphoria?

A Correct.

Q Is there a test for diagnosing gender dysphoria such as a lab test or imaging test?

A The gold standard test is a clinical interview using the DSM-5 Text Revision criteria.

Q But I think you may have mentioned -- gotten at this earlier, but is there a known error rate as to using the diagnosis for the DSM-5?

MR. STRANGIO: Object to form.

A Yeah, again, when you say "error rate," are you asking about false positives or false negatives?

Q Why don't we talk about those, starting with is there a known rate of false negatives?

A So again, when you calculate either of those false negatives or false positives, you need to apply the test you're asking about to a sample of people and

see by that test how many have the diagnosis or don't, and then you have to do that same thing with the gold standard test, which is applying the DSM-5 criteria and look -- see which of those same people do or do not meet criteria.

But in the situation you're describing, you're comparing the gold standard to the gold standard, so there wouldn't be a false positive or a false negative rate.

Q How does something like this get established as the gold standard?

A The DSM is -- and I don't know all the details of the process, but it's the psychiatric manual put forth by the American Psychiatric Association. It has several chapters. I believe each chapter has a lead, and then for the different diagnoses, there's a committee of experts and a lead. And they go through the literature and use their clinical experience and then create the manual, and it's periodically updated. So it was most recently updated for the DSM-5 Text Revision.

Q Has there research been done on the causes of gender dysphoria?

MR. STRANGIO: Object to form.

A Yes. There's been quite a bit.

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Q Does it point us to anything as to likely causes of gender dysphoria?

A So people have looked at a range of potential environmental factors, things likes maternal characteristics, like time -- mostly interactions between parents and kids. And generally none of those environmental factors have found a definitive cause in that way.

Then there's been a set of research looking at more biological determinants. So again, there have been twin studies that look at gender dysphoria as the measure. And again, they see there appears to be a strong biological basis for a determinant.

There have also been whole exome studies where they look at the genes of people who are transgender and compare them to the genes of people who are not, and those have identified several, like, putative genes, mostly in estrogen signaling, that are more strongly associated with gender dysphoria. But there's not a single clear gene or cause that's been identified.

Q So I want to switch gears a little bit and start talking about gender-affirming care. So you use the term "gender-affirming care" several times. What is encompassed within that term?

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A It's a broad term. If you're just using the term "gender-affirming care," that can mean anything ranging from working with schools to make sure that a child is not bullied and treated appropriately and respected so they can thrive in their school environment. It can involve legal affirmation, like changing one's name or gender markers on official legal documents.

It can also mean gender-affirming medical care, which is a more specific term that can refer to a range of medical interventions that depend on the stage of development of the person.

Q What are those medical interventions?

A So the earliest one that might be considered would be pubertal suppression. The medications used for that are gonadotropin-releasing hormone agonists. Sometimes colloquially they're called puberty blockers, or the other term, pubertal suppression. Those are first considered when the adolescent reaches the early stages of puberty, assuming they meet several other criteria.

Those medications were first developed for a condition called precocious puberty. That's what their FDA indication is for in minors. And I think that condition helps you understand how they work.

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So those are young people who enter puberty very early, as early as, say, age three. And so they'll receive these medications to temporarily pause puberty until they're at a more developmentally appropriate age to start going through it, at which point the medication is stopped and their endocrine axis that initiates puberty starts again.

So they're used similarly for adolescents with gender dysphoria in that generally these adolescents sometimes enter puberty and start to have negative psychological outcomes related to going through the puberty that doesn't match their gender identity.

To help you understand this, some of these kids have understood their gender identity, let's say a trans girl, sex assigned at birth male, may have been expressing a female gender identity since age three or four and has known herself as a girl throughout her entire life, and then all a sudden is about to start going through male puberty or really has to start going through male puberty before she would be eligible for this medication.

So what it does is it puts that on pause so that that adolescent at that point can have more time and work with a therapist to come to better

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understand their gender identity without the pressure of puberty actually progressing. Because as many of the secondary sex characteristics develop of puberty, we can't later undo that if that person continues to identify as trans later in life without pretty invasive interventions, if it's possible at all.

Later in adolescence you might consider gender-affirming hormones. So that generally means estrogen for trans girls or testosterone for trans boys, and that induces the puberty of their gender identity.

Then you'll hear about gender-affirming surgeries. The vast majority of those aren't generally considered until adulthood, but the one that is sometimes considered for minors is gender-affirming top surgery or masculinizing top surgery, which obviously is a big decision and is only pursued if a mental health professional, a medical professional, an adolescent, and their legal guardians are all in agreement that the benefits of that surgery will outweigh the risks.

But that involves removal of breast tissue, either through -- if there's a very small amount of breast tissue at that time through liposuction

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essentially or through surgical removal. That's a different surgery.

Q Okay.

A And then in adulthood, in rarely -- in adulthood, that's when you might hear about other surgeries like general surgeries, et cetera. Under the older guidelines, surgery was never considered until age 18 and up. The latest guidelines removed that age requirement to acknowledge that there might be situations in which there might be a compelling reason to have some of those other surgeries earlier.

The only one I've heard of has been a vaginoplasty, which is a surgical creation of a vagina, usually like in a 17-year-old who's not quite yet 18, and it's usually because they want to be able to have their surgical recovery before they go to college.

Q Thank you. That's a helpful overview.

Do all minors who are transgender want gender-affirming medical care?

MR. STRANGIO: Object to form.

A No.

Q Is gender-affirming medical care medically indicated for all minors with gender dysphoria?

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MR. STRANGIO: Object to form.

A No.

Q What are some of the reasons minors with gender dysphoria will not be eligible for gender-affirming medical care?

MR. STRANGIO: Object to form.

A They could potentially have a medical contraindication, so say a young person is at high risk of blood clots due to a genetic condition, it may not be appropriate to consider estrogen. That can increase clotting risks. It's a more complicated discussion because there are different formulations, and some of them carry lower risks of blood clots.

In many of these cases, you're always weighing potential risks against potential benefits. So you'd be weighing how severe that person's gender dysphoria is against the risk of a blood clot, let's say.

You also see in the guidelines that other mental health conditions need to be reasonably well controlled. So if a person is in acute psychiatric crisis and wouldn't be able to, say, adhere to the blood monitoring that's necessary or the other things that are necessary to make sure that

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gender-affirming medical care is safe, they may not -- it may not be medically indicated.

If they've not yet had a comprehensive biopsychosocial evaluation by a mental health professional, it may not be medically indicated. But in any of these cases, it's a case-by-case basis, where the expert mental health and medical team need to be weighing the risks and benefits in any given situation.

Q A minute ago you mentioned a biopsychosocial evaluation. Did I get that term right?

A Yes.

Q What is that?

A So a biopsychosocial evaluation is a mental health evaluation, and it has three kind of parent categories. But all coming back to describing the person's mental health. And it's literally bio, psycho, social evaluation.

So you look at biological factors that may be contributing to the person's mental health presentation. You then look at psychological factors that may be contributing. And then you look at social factors that may be contributing. And in psychiatry we usually have an assessment and a plan. So you may potentially break your plan

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down by biological interventions, psychological interventions, social interventions.

Q And that assessment is required before you start gender-affirming medical care?

MR. STRANGIO: Object to form.

A Current medical -- if strictly following the current medical guidelines, it is required. Again, there are -- can be extenuating circumstances in medicine, but I can't think of a specific time where you wouldn't do a biopsychosocial evaluation. It's generally considered part of the standard of care.

Q How long does a -- or help me to understand how thorough these evaluations are. How long do they last?

MR. STRANGIO: Object to form.

A It depends on the complexity of the case. So you can imagine if there is, let's take that child I described earlier who had a clear understanding of her gender identity since she's been three or four. She's been living as a girl her whole life. She's now an adolescent. She has no other mental health concerns.

Maybe she's been in therapy this entire time weekly and has a really sophisticated understanding

of her gender identity and the risks and benefits of these medical interventions because she's been talking about them with her family for years before ever coming to see you. That's going to be a much shorter evaluation than, say, a patient who has schizophrenia and PTSD and hasn't been as engaged in mental health care until recently and is seeking care.

So the guidelines intentionally don't say you should have this many sessions because it really is -- it's important to use your clinical expertise and to work through a case however long it takes.

Q So if you had a simple case like you just described, how many sessions would you expect this evaluation to last?

MR. STRANGIO: Object to form.

A It's hard to say for sure, but if I were to give you a rough estimate, maybe five or six sessions over a few months. Very complicated cases, I've certainly heard go for a year or longer. But again, it's very dependent on the clinician and really dependent on the situation.

Q And when you're doing one of these evaluations, is it just conversations with the patient? Are you reviewing medical records? Can you help me

understand sort of what is the scope of material someone would review?

MR. STRANGIO: Object to form.

A And again, we're describing clinical practice, so people who -- not everybody's clinical practice is going to look exactly the same because different psychiatrists or mental health professionals might do things a little bit differently and still be following appropriate practice.

But generally you would interview the child and provide a lot of education, develop interventions and about gender identity. You'd want to know their -- the history of their gender identity, when did they first start thinking about this, how are they thinking about this now, how has that changed over time, is their family supportive, is their school supportive, is there any bullying going on, are they able to use a bathroom where they feel safe. Are they able to participate in sports at school.

You end up talking about the medical interventions. You end up talking about how these interventions impact fertility, all the potential side effects. You want to understand any physical gender dysphoria they're having, so are there parts

of the way -- specific things about puberty that they're really upset about.

You want to identify any other potential mental health conditions. So if they have depression or anxiety or an eating disorder or a psychosis or a bipolar disorder or anything else that could be clouding your diagnostic picture of what's going on.

And then obviously you meet with parents and review what you've learned in the session, and often parents need a lot of education also. I'll usually also have a session with the adolescent and their parents all together to see, you know, is there anything that we haven't covered or we haven't discussed that's giving anyone pause or that we need to explore more, we don't fully understand, or if they have more questions about what the medical intervention entails.

Then generally they would meet with the medical providers also, who go through all of the risks, benefits, potential side effects of the medical intervention again. And most clinics, that I know of anyway, have the parents actually sign that they've gone through the entire thing, and the parents are providing consent and that the minor

provides their assent.

Some pediatric medicine, except for in rare exceptions, adolescents can't consent to medical care on their own. It's the parents who provide the consent and the adolescent provides what we call assent.

Q Why is that -- why is there a distinction drawn between consent and assent?

MR. STRANGIO: Object to form.

A Because there's generally an understanding that parents have the developmental capacity to better understand medical interventions and what's in the best interest of their children. There are exceptions to that case, like emancipated minors or minors who may be particularly mature.

There's something called the Appelbaum criteria in psychiatry that we use to determine if someone has capacity to give consent for their own medical decisions. So that could theoretically be applied to a minor. But generally as a matter of pediatric medicine, and usually it's law, parents need to provide consent for medical interventions.

Q One thing I would -- so earlier I think you mentioned that a simple case could be a child that may have had a clear understanding of their gender

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identity since age three or so. How do you determine whether an understanding is clear?

MR. STRANGIO: Object to form.

A So some minors will come to clinic and say, you know, I want to better understand my gender identity, that I feel like I don't have a clear sense of it. And in that case we have a different kind of therapy that we call exploratory psychotherapy and gender where we work with the person to help them better understand gender identity and themselves. It's a nondirective therapy to just guide them to talk through things out loud until they feel like they do have a clear understanding of themselves.

Other patients are different. You know, they'll tell you, I am a girl. It's very clear in my mind, and it will continue to be very clear to them for many years by the time you see them.

Q I guess one thing that I'm having a little trouble understanding, maybe you can help unpack for me is how a three-year-old can have a clear understanding of any concept when they're still developing.

MR. STRANGIO: Object to form.

A Toddlers have some clear understandings of things, right. They know what they want. They are

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starting to develop language. They're sentient beings and can have clarity about things. And you certainly will meet children that, you know, three, four, five, will start to say things like, I'm a girl. When am I going to have a vagina? Why do I have a penis? Why am I being separated to be with the boys instead of with the girls because I'm a girl? That more happens in the school age years.

And, of course, most parents will say, you know, if it's a birth-assigned male that's saying I'm a girl, it's, hey, because you're a boy, and will try to explain that usually based on sex assigned at birth. Most parents -- I guess that's changing, but historically, a lot of parents don't have any understanding of a transgender child. They've never met one. So it can be pretty shocking, and they're usually just saying -- like explaining, probably the way you would, like this is why you're a boy. But the kid says, but I'm not a boy, I am a girl, I need to be with the girls. And they just seem to have this clarity about that concept in their mind.

Q So do you -- by clarity, are you just thinking sort of consistent and emphatic?

MR. STRANGIO: Object to form.

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A Yeah, you'll hear -- this isn't a clinical term, but you'll hear like insistent, consistent, persistent, so I think you just covered two of those. So insistent and persistent. But also that, you know, they're explaining it in a way that's not, like, suggesting confusion other than the fact that, like, the parents, like, see the person as their sex assigned at birth, you know.

Like, you could imagine maybe a kid, this could be a slightly older kid, so maybe -- I had a patient who, I think -- I want to make sure I can anonymize this sufficiently. I'll change the details to make this not identifiable, but it will be the same concept.

So let's say there was a kid with autism who had very rigid thinking who enjoyed a stereotypical, like, what you would think of as a female activity, like dancing or ballet. And that kid says to you, I'm -- I was assigned male at birth, but I'm a girl. Like, I'm a girl. And you say, oh, tell me more about that. Why?

And they say, well, because I like knitting. And then you might -- a parent will logically say, well, you can like that knitting or ballet or gymnastics and still be a boy. And, you know,

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someone with very rigid thinking might say, like, oh, that helps me understand that I am a boy who likes ballet or dancing or knitting.

So that that would be a case where it wouldn't be -- that they had a clear understanding because when you ask them about it more it becomes relatively clear that it was related to something different.

MR. BARTA: I think we're at about an hour mark here. Would this be a good time to take a break?

MR. STRANGIO: That's great. We'll do five minutes.

MR. BARTA: That's fine.

MR. STRANGIO: Okay, great.

THE WITNESS: Thank you.

(Recess taken.)

BY MR. BARTA:

Q So I wanted to follow up with one concept we were talking about just before the break. I think in your description of psycho -- the biopsychosocial analysis that takes place, you mentioned that other conditions can cloud the picture.

Can you explain that some more?

MR. STRANGIO: Object to form.

A Uh-huh. They're relatively rare, but you could have someone with schizophrenia where part of their delusions involve gendered aspects that sometimes can be difficult to tease apart. It certainly takes time.

There's a case series published by the Dutch group, that's one of the -- they're one of the leading groups to publish research in this area where they had several such cases and described how they worked with those patients to understand if the gender dysphoria was a separate diagnosis from their psychosis and schizophrenia.

To be clear, actually in that series, there were several patients where they were separate, so they were over time able to treat their psychosis to a point that the psychosis was gone, but the gender dysphoria persisted and then those patients did well with gender-affirming medical care. But that's just one example.

Q All right. So I want to turn to your declaration. So in paragraph 11 of your declaration. I'll give you a moment to turn there.

A Yes.

Q So in paragraph 11, you say "gender-affirming medical interventions improve mental health for

adolescents with gender dysphoria when medically indicated."

Did I read that correctly?

A Yes.

Q Are you saying here that gender-affirming medical interventions cause improved mental health?

MR. STRANGIO: Object to form.

A We can go through the literature in detail, but there are two sets of studies, generally. Both for puberty blockers and gender-affirming hormones, that when taken together, show that gender-affirming medical interventions improve mental health. The first set of studies are longitudinal studies that address one element of causation, which I think is what you're asking. And those studies show that after gender-affirming medical interventions, mental health is better than before.

The limitation of those studies is that they don't have a control group of people who didn't receive intervention. So you could ask yourself, you know, maybe these people's mental health was going to improve if you didn't give the intervention.

So those studies are supplemented by another

set of studies that are cross-sectional studies that have control groups that compare people who received the intervention to people who didn't after adjusting for a whole bunch of other factors that could impact those results. So that gives you, you know, the other part that you want to know for causation that it wasn't just time that led them to get better but that people who got the treatment do better than those who don't.

Q Okay. Let's talk maybe more about those studies. But before we do, I guess you make a similar statement in paragraph 12 of your declaration where you say, "Existing research shows gender-affirming medical treatments for adolescents with gender dysphoria are consistently linked to improved mental health."

Is that right?

A Correct.

Q Okay. And by "linked to," do you mean caused?

MR. STRANGIO: Object to form.

A I would just say what I said before, that there are two sets of studies that look at whether or not these interventions are the reason that mental health is improving. There's a set of studies that show that there's an association between the

timing, you know, before and after, after these people had better mental health. And then the other set of studies show the control group, right, that the people who got the treatment do better than those who don't.

So if you're talking about an individual study, I would more say linked because I wouldn't recommend taking any one study because there's no one single study that is going to show you the causation question. Because all the studies have different strengths and limitations, and you have to look at all of them as a body of literature.

Q And when you say "consistently linked," do you mean that all the research points in the same direction?

MR. STRANGIO: Object to form.

A Of the studies I'm aware of, they've all either found improvement of mental health or not found a worsening of mental health. Like, say, a longitudinal study they found that, you know, it didn't get worse.

And even mental health not getting worse is notable because particularly if you're talking about a period of time when people are going through puberty, as I described earlier, these kids, if they're considering these interventions,

are usually having severe psychological distress about puberty.

So actually most kids don't get treatment, and clinicians have observed those patients get worse over time. So not worsening is also a good outcome. But I'm not aware of any studies showing that or linking the treatment to worse mental health.

Q What about inconclusive studies, are you aware of those?

MR. STRANGIO: Object to form.

A There are certainly studies that don't meet their threshold of statistical significance, which can be for a number of reasons, including that the sample size was too small to have statistical power to detect a difference.

Q And I think this sentence is also talking about adolescence. That those are children who've experienced puberty; is that correct?

MR. STRANGIO: Object to form.

A It refers to a person somewhere between Tanner 2 puberty, which is the early stage of puberty, and adulthood.

Q Are all these studies on minors who first experience symptoms of gender dysphoria in

adolescence?

MR. STRANGIO: Object to form.

A I don't think all of the studies specifically state when the participants started experiencing gender dysphoria. Some may state. Others, I believe, don't.

Q Are there differences in the populations between minors who experience gender dysphoria during puberty versus before puberty?

A Could you say the question again.

Q Are there differences in the population of minors who first experience gender dysphoria at or after puberty versus before puberty?

MR. STRANGIO: Object to form.

A The best paper that I can think of to look at that is one that's on my CV, that was from our group, where we looked at people who first came to understand their gender identity before the onset of puberty with people who first came to understand their gender identity after the onset of puberty. And there were some demographic differences, some different life experiences.

I think the people who came to understand it in early childhood, for instance, experienced more bullying, which makes sense because they were

probably more likely to have told someone. And trans identities are stigmatized. So that's one example of how it's different.

Q Do you think studies on people who first experienced symptoms before puberty can be generalized to people who first experienced symptoms at or after puberty?

MR. STRANGIO: Object to form.

A So I believe the Dutch group did have a study where they looked at their referrals that they had in the past versus their more recent referrals, and I think there was a difference in the proportion who came to understand their gender identity earlier versus later. And I remember that their kind of bottom line conclusion was that there weren't substantial differences, but I'd have to review the paper.

But it's -- I mean, it's typical that we -- you know, any time you do a research study, you're not going to have the exact population in front of you, right. So like in clinical trials for depression, you're doing that study in a group of people who have certain life experiences and have depression, right. The important thing is that they have depression.

And then we generalize that to people who weren't in the study who have different experiences, right, who live in different states or maybe their depression started at different ages. But it's not uncommon in psychiatry to have a study of people who have a certain diagnosis and then generalize that to people who have that diagnosis even if they're not exactly the same in every respect or that there's symptoms developed at different ages.

Q Okay. So let's -- I think we're going to start turning to some of the more specific statements, more specific concepts discussed in your report beginning with pubertal suppression. So you mentioned pubertal suppression earlier. Can you remind me exactly what that involves?

MR. STRANGIO: Object to form.

A Generally it involves treatment with a gonadotropin-releasing hormone agonist.

Q How long does pubertal suppression typically last?

MR. STRANGIO: Object to form.

A There are different formulations, so some of them are long-acting injections that last for a few months. There are also subcutaneous implants. Just little implants that go right under the skin,

usually on the arm. Those are marketed to last about a year. But there's been some research to suggest that they last closer to two years. When you remove the blocker, it would stop working.

Q For what period of time are children typically given pubertal suppressing drugs?

MR. STRANGIO: Object to form.

A So different pediatric endocrinologists will give you different exact numbers, but we are cautious to not leave people on puberty blockers indefinitely because you need sex hormones to mineralize your bones. So while you're taking a puberty blocker, you're going to fall behind on bone density compared to your peers. So for that reason many pediatric endocrinologists also track bone density while people are on these medications.

And if they were to see that they're falling behind too much on bone density, they would probably have a discussion with the family saying, you know, this is becoming risky to your bones. You should either stop the puberty blocker and go through your endogenous puberty or the puberty you would go through without intervention or start gender-affirming hormones. And so, you know, that consideration can happen at any time.

But I would say most pediatric endocrinologists by the time someone reaches 16 or so, that's when they start having more serious conversations about not waiting much longer to stay on the puberty blocker for the bone health reason.

Q What is the purpose of giving a child puberty blockers?

MR. STRANGIO: Object to form.

Q Let me restate that.

What is the purpose of giving a child with gender dysphoria puberty blockers?

A So we wouldn't give a child puberty blockers. Do you mean an adolescent?

Q I do.

A So an adolescent with gender dysphoria, the goal of the pubertal suppression is to alleviate the distress that's being caused by their body developing in a way that is incongruent with their gender identity which also gives them more time to make that future decision of are they going to go through their endogenous puberty or are they going to take medication to go through puberty without all this continually magnifying stress of the puberty itself.

Q Are there situations in which you would -- in

treating an adolescent with gender dysphoria you would skip pubertal suppression and go straight on to giving hormones?

MR. STRANGIO: Object to form.

A So it's often that an adolescent doesn't make it to a clinic at a young enough age or an early enough stage of pubertal development to be a candidate for puberty blockers. So if puberty is finished, a puberty blocker is not going to be useful. So in those cases, which is more cases than not, they've never had pubertal suppression.

Q So, but for some -- for someone with gender dysphoria who makes it to a clinic, you know, before or at Tanner stage 2, they would go on puberty blockers rather than hormones?

MR. STRANGIO: Object to form.

A Could you describe more about the case?

Q What I'm trying to understand is if you have someone who comes to a clinic before the onset of puberty, would they always be put on pubertal suppression drugs when puberty begins or would they ever be moved directly to hormones?

MR. STRANGIO: Object to form.

A Someone who comes before the onset of puberty would not be a candidate for either of those

interventions.

Q When someone comes at the onset of puberty, would they always be put on pubertal suppression drugs?

MR. STRANGIO: Object to form.

A No, for a number of reasons. The family wasn't on board, if they hadn't had a mental health evaluation, if they -- I'm trying to think of, like, specific medical complications.

Q Maybe I can rephrase this to make it clearer.

What I'm trying to understand is if someone who is eligible for puberty blockers and has gender dysphoria comes to a clinic, is the first course of treatment always going to be puberty blockers instead of hormones, or are there cases in which hormones would be given without puberty blockers?

MR. STRANGIO: Object to form.

A I can't think of a circumstance if someone is coming in at Tanner stage 2 of puberty that they would receive immediate gender-affirming hormones instead of pubertal suppression.

Q Okay. Is there a reason it is important to start -- to go with pubertal suppression instead of hormones in that situation?

MR. STRANGIO: Object to form.

A So the guidelines are designed to go with the most

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reversible interventions first and the least reversible interventions later. So puberty blockers, if stopped, you'll go through your endogenous puberty, so in that way they are reversible.

Gender-affirming hormones, like estrogen or testosterone, once you've been on them for a certain period of time, you'll start to develop characteristics that are more permanent. The best example I can give is voice deepening. Testosterone will thicken and lengthen the vocal cords, and that's very hard to undo later. There are surgeries. There's vocal training people can do, but, you know, that's a more irreversible effect than the puberty blocker.

And then obviously surgery is the most irreversible, and so that's why it's generally considered last.

Q Why is reversibility a concern?

MR. STRANGIO: Object to form.

A This is a very cautious area of medicine where we want to be really careful that people don't later regret an intervention that they have.

So you'll see later in the report, a lot of this care is designed around preventing an outcome

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where someone regrets having had any of the interventions that they had. So that's why we go in a very cautious, step-wise fashion, from most reversible to least reversible, and that's likely part of the reason that the regret rates are so low is that this area of medicine is cautious in that way and in requiring a comprehensive mental health evaluation prior to starting an intervention.

Q So are there conditions that would disqualify a minor from starting pubertal suppression?

MR. STRANGIO: Object to form.

A What do you mean by "condition"? Like a medical co-morbidity or --

Q So are there medical co-morbidities that would prevent a minor from receiving pubertal suppression?

A Perhaps if they already had very low bone density. I'm trying to think of other -- if they were too far progressed through puberty. That would be a better question for a pediatric endocrinologist.

Q Are you aware of psychological conditions that would render someone ineligible for pubertal suppression?

MR. STRANGIO: Object to form.

A I'm not aware of any absolute contraindications.

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As I said before, there might be conditions that would require you to extend the diagnostic phase and the amount of time working with the mental health professional before you could feel confident that it's the right course of treatment for a patient.

Q All right. So in paragraph 14 of your declaration, I'm going to -- you say, "Peer-reviewed cross-sectional and longitudinal studies have found that pubertal suppression is associated with a range of improved mental health outcomes for adolescents with gender dysphoria."

Did I read that correctly?

A Yes.

Q So when you say "associated with," you're not saying caused; correct?

MR. STRANGIO: Object to form.

A So this goes back to what I was saying earlier, that if you're going to look at a single study, like, say, just one cross-sectional study or one longitudinal study, I would not make causal inferences from a single study.

Q And just so I'm clear, what is the difference between cause and association?

A So cause means that the -- a certain variable is

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the reason that another variable changed. Association is that two variables change in the same direction. Or track together.

Q All right. So the -- one of the studies --

MR. BARTA: Shawn, could you bring up as Exhibit 4 the de Vries 2011.

(Deposition Exhibit 4 marked.)

Q Dr. Turban, is this one of the studies you cite in your discussion of pubertal suppression?

A Yes.

Q And I believe this is a longitudinal cohort study of Dutch patients; is that right?

A Yes.

Q What is a longitudinal cohort study?

A A longitudinal cohort study is a study in which you have a cohort, which is a group of patients, who you follow over time.

Q So in this study there's no control group like in a randomized control trial?

A A randomized control trial is one type of study that has a control group. I just want to be clear, those aren't synonyms. But correct, a longitudinal cohort study, specifically this longitudinal cohort study, does not have a control group.

Q And so then you agree this type of study cannot

establish causation by itself?

MR. STRANGIO: Object to form.

A I would not take this single study in isolation to make a causal determination.

Q In this study there were 70 patients; is that right?

THE WITNESS: Do we have a printout of this one?

MR. STRANGIO: I can look.

A Well, I can see that the methods say of the first eligible 70 candidates, but I just want to see the rest of the methods because they're --

Q Sure.

MR. BARTA: Can we scroll to page 2278.

SHAWN WEYERBACHER: Sure.

MR. STRANGIO: And just, I handed that -- a paper copy as well so you can concurrently scroll, and then that is in front of him now.

MR. BARTA: Perfect. Thank you so much.

A So if you look at the "Methods" section on page 2277, so they describe a larger cohort. So between 2000 and 2008, 140 of 196 consecutively referred adolescents to their gender clinic were considered eligible for a medical intervention at the Amsterdam clinic.

Of those, 29 were 16 or older and were prescribed -- CSH there means cross-sex hormones. It's an older term for gender-affirming hormones. The other 111 adolescents were prescribed GnRHa. Those are the gonadotropin-releasing hormone agonists or puberty blockers, pubertal suppression, which is to suppress puberty.

Then this study looked at the first 70 adolescents who received pubertal suppression. And it looks like also subsequently started gender-affirming hormones between the years 2003 and 2009.

Q So this study only included people who went on to receive cross-sex hormones?

MR. STRANGIO: Object to form.

A That appears to be correct.

Q So the data would not include people who received puberty blockers but decided not to continue to cross-sex hormones?

MR. STRANGIO: Object to form.

A I believe that's true. There's another study from the same clinic. I believe it's also cited in my report. Sorry, I don't know how to pronounce the last name of the first author, but it's W-I-E-P-J-E-S, where they report that of patients

in that clinic who start pubertal suppression, 1.9 percent of them did not continue on to gender-affirming hormones.

Q Okay. We can talk about that study later.

But of this data set, this would only include people who went on to receive gender-affirming hormones; right?

A Correct. I'm just providing the additional context that that would be most of them.

Q So turning to page 2282 of this study. Under "Conclusions," the authors say, "Gender dysphoria did not result as a result of puberty suppression."

Did I read that correct?

A Correct. And if -- we need to look at what scale they used, because if you remember, gender dysphoria refers to having a gender identity that's different from your sex assigned at birth and having clinically significant impairment from that.

So, you know, like that core component of it, having a gender identity that's different from your sex assigned at birth, that wouldn't be expected to be resolved by puberty blockers. What you're relieving is that the stress of the physical gender dysphoria, but your gender identity is still going to be different than your sex assigned at birth.

So if that's continuing to create a problem for any reason, if you're being bullied, if you are still dysphoric about the fact that you haven't been able to go through the puberty of your gender identity, you would expect the gender dysphoria to still be there. In fact, you'll see the next sentence says, "Psychological functioning, however, improved in various respects."

Q Right. So they do say psychological functioning has improved. The authors don't claim that pubertal suppression causes improved psychological functioning; correct?

MR. STRANGIO: Object to form.

A I would assume generally in a paper like this, that's a longitudinal cohort study, they'll emphasize that it only tells you one part of that question, that, you know, mental health improves before and after. And you should not use a single study like this to imply causation, and I'm presuming they say that somewhere in the discussion.

Q So the next sentence after that, it says, "We cautiously conclude that puberty suppression may be a valuable element in clinical management of adolescent gender dysphoria."

Did I read that correctly?

A Correct. And to highlight, this paper was published in 2011. So over a decade ago.

Q In addition to pubertal suppression, the authors also identify some other possible explanations for their finding; is that correct?

MR. STRANGIO: Object to form.

A Can you point me to the section of the paper?

Q Sure, sure. So on page 2281, in the first full paragraph, or second full paragraph, the authors say, "There may be various explanations for these results."

Do you see that?

A Yes.

Q So further down in that paragraph, the authors also say --

A Do you mind reading the paragraph continuously just so we don't lose context?

Q Sure. "Foremost, suppression of the development of secondary sex characteristics resulted in a physical appearance allowing for a smooth transition into the desired gender role. In adult transsexuals, postoperative psychopathology is associated with difficulties in passing into their new gender. Furthermore, by receiving pubertal

suppression, gender dysphoric adolescents may trust that GR will be offered if needed. In addition, stigmatization and discrimination (e.g., references [11,31].) may have been limited because the adolescents in this study received extensive family or other social support. Finally, the adolescents were all regularly seen by one of the clinic's psychologists or psychiatrists. Psychological or social problems could thus be timely addressed. All of these factors may have contributed to the psychological well-being of these gender dysphoric adolescents."

So one of the potential explanations for the improvement that the authors identify is psychological support; is that right?

A As one of the possibilities, yes.

Q And another is family and social support?

A Yes.

Q And does this -- and then does this study tell us anything about the long-term effects of pubertal suppression?

MR. STRANGIO: Object to form.

A This is one of the very first papers that they published, so it's not the longest follow-up they've looked at. The longest follow-up would

have been the paper in pediatrics that they published.

Q We can turn there in a moment. I'm asking about this paper.

A So it looks like this paper, which again, is their first paper from over a decade ago, looked at mental health an average of two years after starting puberty blockers.

Q Would you agree that longer term studies need to be done than two years to determine the impact of pubertal suppression?

MR. STRANGIO: Object to form.

A I think more research is always better. And as I mentioned, they have continued to publish data here. But I'd also emphasize that we don't have a standard in medicine that we need to have many years of follow-up data before using a medication. Just to provide an example, if that were required, we wouldn't be able to use any of the medications that were approved in the past decade or so.

Q So on page 2282 of this study, in the -- I think it's the second full paragraph, the authors say, "Long-term follow-up studies, however, should be performed to examine whether these adolescents will be able to maintain the relatively good functioning

into their adult years after GR."

Did I read that correctly?

A Yes. And then the same group did publish that follow-up data that we can talk about later in that Pediatrics paper.

Q Okay. Well, why don't we turn there now.

MR. BARTA: Shawn, you can take this down and put up as Exhibit 5 the de Vries 2014 study.

(Deposition Exhibit 5 marked.)

Q This should be Exhibit 5.

A Thanks. I think we're just looking to see if we have a hard copy.

Okay, I think we have the same paper.

Q Okay, great. So is this the 2014 de Vries study you cite in your declaration?

A Yes.

Q And this is the long -- the study you said that provided longer term following up you were mentioning a moment ago?

A For those Dutch patients, yes.

Q So on page 697 of this study, it says, under -- right under "Methods," it says, "Participants included 55 young adults (22 transwomen [natal males who have a female gender identity] and 33 transmen [natal females who have a male gender

identity]) of the first cohort of 70 adolescents who had GD who were prescribed puberty suppression at the Center of Expertise on Gender Dysphoria of the VU University Medical Center and continued with GSR between 2004 and 2011."

So this study is looking at a subgroup of the same cohort that the 2011 study examined?

A Correct.

Q Okay. So that -- so all of the participants in this study were the same ones that received extensive psychological and social support?

MR. STRANGIO: Object to form.

A Correct. I believe the description of the cohort from the 2011 paper would apply to this subset of those patients.

Q And so this paper didn't look at the effects of pubertal suppression without mental or psychological support; correct?

MR. STRANGIO: Object to form.

A I'd look back at the -- that could mean many things. But generally, yes, I believe that these patients had mental health supports at the very least during that early phase described in the 2011 paper.

Q So I see only 55 of the original cohort

participated in this study. Does that mean -- that means 15 dropped out?

MR. STRANGIO: Object to form.

A It looks like they describe the reasons that several of the patients from that original cohort were included, and then they do a statistical analysis that we often perform when certain people aren't included in the study to see if they are different than those who were included.

So that's where you see between the 55 participants and the 15 nonparticipating individuals, T tests reveal no significant differences on any of the pretreatment variables. And that's where a lack of difference was found between the 40 participants who had complete data and the 15 who had some missing data. That's the appropriate statistical method to use to estimate if your results would be impacted by including -- or not including the people who were not included.

Q And so this study -- so looking at -- still on page 697, it looks like the patients were assessed three times over the course of their treatment; once at intake, once at the initiation of cross-sex hormones, and once after -- one year after gender reassignment surgery; is that correct?

A Correct.

Q So this study doesn't give us any data more than one year after gender reassignment surgery?

A Correct. Which by the way would have been done in adulthood, not in adolescence.

Q So I want to flip to another -- so would you -- so I want to flip to page 702 of this study. There's a sentence that -- in the left column that says, "Psycho-" -- well, I'll just read the whole left column.

"Psychological functioning improved steadily over time resulting in rates of clinical problems that are indistinguishable from the general population sampled (eg, percent in the clinical range dropped from 30 percent to 7 on the YSR/ASR) and quality of life with satisfaction with life and subjective happiness comparable to same age peers. Apparently the clinical protocol of the multidisciplinary team was mental health professionals, physicians, and surgeons gave these formerly gender dysphoric youth the opportunity to develop into well-functioning adults."

So it appears from this sentence that one of the things they're emphasizing is that there was a multidisciplinary approach to the care; is that

right?

MR. STRANGIO: Object to form.

A Correct.

Q And that included mental health professionals?

A Correct.

Q So this doesn't tell us what the results would be without mental health professionals?

MR. STRANGIO: Object to form.

A The standard of care is to have a mental health professional involved, so yes, this study had a mental health professional involved as the way this care generally is to be provided under current guidelines. It wouldn't tell you necessarily if you were practicing outside of guidelines what the results would be.

Q And I think we discussed earlier that all the patients were drawn from the -- a single clinic in the Netherlands; is that right?

A For this study, correct.

Q Do we know what -- do the authors claim that their results can be generalized to the U.S. transgender population?

MR. STRANGIO: Object to form.

A No, I don't believe so.

Q Could there be differences in the transgender U.S.

population from the single cohort that was studied here?

MR. STRANGIO: Object to form.

A Potentially. Obviously there are differences in that they live in a different country, for one. That's part of why some of the other papers cited are from clinics in the U.S.

Q Are you aware that the study's lead author, de Vries, has cautioned against applying the results of the research to adolescents without a childhood history of gender dysphoria?

MR. STRANGIO: Object to form.

A Are you referring to a specific statement that you have?

Q Not in this paper. I'm just asking if you're aware of that.

A I would need to see the specific statement you're referring to so I could better understand what you're referencing.

Q Do you think that the results of this study -- just looking at just this study, this study can be generalized to adolescents without childhood symptoms of gender dysphoria?

MR. STRANGIO: Object to form.

A Again, as we said earlier, it's not uncommon to

take a study of people who have a sort of mental health condition and generalize that to other people with that same mental health condition that started at a different time, particularly if you don't have other data.

In any given situation, you have a patient in front of you, and you need to use the best data available. So if this were the only paper available, I would certainly be using that paper and trying to decide what to do with a particular adolescent who was in my clinic, if they were having severe psychological distress that I was worried about.

But I would just point out that this is not the only study. So that -- that's a hypothetical, but not the actual clinical situation that we're faced with.

Q If this were the only study, would you -- would you need to approach applying this to an adolescent without childhood symptoms of gender dysphoria with some caution?

MR. STRANGIO: Object to form.

A Sorry, I think I already answered that question, that it's not -- with any given patient, you need to use the data that you have and make the best

decision considering the data that you have and the data that you don't. You certainly would acknowledge that these patients had childhood diagnoses of gender dysphoria when making that decision, yes. But I don't know, when you say "substantial," I don't know what the exact language you used, but --

Q I don't believe I --

MR. BARTA: Shawn, you can take this down. Thank you.

Q So turning back to your declaration, Dr. Turban, in paragraph 14, you say, "in the realm of cross-sectional studies, Turban et al. Pediatrics 2020 found that, after controlling for a range of other variables, those who accessed pubertal suppression had lower odds of lifetime suicidal ideation than those who desired but were unable to access this intervention during adolescence."

Is that right?

A Yes.

Q Okay. So before we turn to the study itself, what is suicide ideation?

A Thinking about ending one's life.

Q Is that different from attempting suicide?

MR. STRANGIO: Object to form.

A When we think about suicidality, both clinically and in research settings, we think of it as being on a spectrum from -- this would be like a whole lecture, and I'll spare you. But on that continuum, it ranges from thinking about suicide but not having any plan, not having any intent -- all of those fall within suicidal ideation and are different levels of severity -- and then there could be an actual suicide attempt, which would be more severe.

And then within suicide attempts, there are more potentially lethal attempts and less potentially lethal attempts. So you can think of suicide attempts requiring medical attention and hospitalization versus not. So suicidal ideation refers to that beginning part of the spectrum that could be thinking about it and having intent to act on it or not, having a plan to act on it or not.

Q Okay.

MR. BARTA: Well, why don't we bring up that study as Exhibit 6, Turban Pediatrics 2020.

(Deposition Exhibit 6 marked.)

A Okay. We're having trouble finding a hard copy, but I can try and look on the laptop.

Q Okay. So from what you see on the laptop, is this

a copy of the study you referenced?
A Yes.
Q And the Turban in this is you, I presume?
A Yes.
Q I think this is a -- so this -- you describe it as a cross-sectional study. What is a cross-sectional study?
A A cross-sectional study is a study that looks at a single point in time.
Q And I've also heard it described as a retrospective cross-sectional study. What's a retrospective study?
A I don't think that's really accurate.
Q Okay.
A A retrospective study is when you're looking at things in the past. So it's -- usually retrospective study means -- let's say I had a clinic for a certain condition and I have my medical records, and I go back through those medical records and report data analyses based on looking at past things that already happened.
This wasn't quite like that. This was just at one point in time and asking people about their experiences, some of which were in the past, which I think is probably what you mean by

"retrospective."
Q Okay. So the -- so with this study you used data collected from the U.S. Transgender Survey; is that right?
A The 2015 iteration, correct.
Q 2015. That was an online survey; right?
MR. STRANGIO: Object to form.
A It was a survey that was hosted on a website, but they had many in-person events where people would do it in person.
Q How were people recruited for that survey?
MR. STRANGIO: Object to form.
A They worked with over 400 community outreach organizations.
Q And these would be LBTQ organizations?
MR. STRANGIO: Object to form.
A They didn't provide a full list, that I've seen, of all the organizations, but they were organizations presumed to work with transgender people that would be able to recruit for the study.
Q Does that outreach tool create -- or outreach method create a risk of selection bias?
MR. STRANGIO: Object to form.
A So there are two types of survey studies roughly, probability samples and non-probability samples.

The study is a non-probability sample, and I can describe the difference.
Q Yeah, can you describe the difference to me?
A Yeah. So a probability study is a study where you randomly pick people out of the population of interest. I apologize for using hand gestures. But I think that's helpful for understanding.
So let's say we have a population of interest. One way that you could truly make sure you're picking people at random is random digit dialing is the classic example of a probability sample. You get a bunch of phone numbers of people in the United States, and you randomly call them one by one, and that becomes your sample.
I'm only aware of one probability sample of transgender people. It was called TransPop. And as you can imagine, if they were just calling random phone numbers in America, the vast majority of those people were not transgender. And so they spent a very long time calling random phone numbers and in the end had a relatively small sample.
So the benefit is that that sample is a population sample and likely representative of the full trans population in the country, but the downside is the sample is really small, and the

smaller your sample, the less you have statistical power where you're going to be able to run meaningful analyses.
Anything that doesn't do that, you know, randomly pick from a population, is a non-probability sample. So this is a non-probability sample. The downside is you can't be sure that it represents the full U.S. population of trans people perfectly.
The benefit is this has over 27,000 trans adults in the study, which is the largest existing data set of trans people that I'm aware of, which allows you to be better powered to run a lot of analyses and, additionally, adjust for potential confounding variables, which are variables that -- kind of like how you were saying before, how do I know if this was from family support or if this was from the puberty blocker. If you have a really large sample size, you can use statistical tricks to answer that question.
So in this study, for instance, we adjust for level family support, as you see in the results section, so we can say, you know, this better mental health that we're seeing from the puberty blockers is not a result of the family support

because we controlled for that, adjusted for it.

So again, it kind of highlights how all of these different studies shouldn't be taken in isolation because they all give you different pieces of the puzzle that you need to know to look at it as a whole.

Q So let's talk a little bit more about the details of the methods. So this was using data collected through a survey. It doesn't call participants over time; correct?

MR. STRANGIO: Object to form.

A Correct.

Q On page 3 of your study, under "Study Population" --

MR. STRANGIO: Sorry, I just saw, we've been going another hour. Do you want to finish with this paper and then take a break or --

MR. BARTA: We can -- I think it may be a little longer. We can take a break here if that would be good.

MR. STRANGIO: Would that be good?

THE WITNESS: I'm okay.

MR. STRANGIO: Okay. I'm good. I just wanted to check. Okay, we can keep going, and then I'll take a break after.

Q So under "Study Population," the second sentence says, "Given that pubertal suppression for transgender youth was not available in the United States until 1998, only participants who were 17 or younger in 1998 would have had healthcare access to GnRHa for pubertal suppression. We thus restricted the analysis to participants who were 36 or younger at the time of the survey."

Is that correct?

A Correct.

Q Are you aware that there were participants who -- in the excluded population who said they have received pubertal suppression?

MR. STRANGIO: Object to form.

A That is the concern -- that's why we did this, so that we wouldn't include people who potentially gave erroneous answers.

Q Is there any way to be sure that people who were 36 or younger were giving correct answers?

MR. STRANGIO: Object to form.

A The younger population is more likely to know what puberty blockers are, given that they were around in the United States by the time that they were eligible. But you can't be a hundred percent sure.

Q Do you know if there was -- were there any mechanisms in the data collection that would prevent someone from taking the survey multiple times?

MR. STRANGIO: Object to form.

A No, not that I'm aware of. I think you potentially could. I will say, if you were trying to take the survey multiple times to create a certain result, that would be very difficult because the way we conducted the analyses, we were looking at variables that were separated. I think there were over how many questions, like maybe 180 questions.

So to be able to take the survey and know what analyses people were going to do years in the future that hadn't yet graded their data analysis plans and to know which parts of the survey you wanted to try to manipulate would have been very difficult.

Q So the data collected here is based off self-reporting of transgender individuals; is that right?

MR. STRANGIO: Object to form.

A Pretty much any time you're looking at mental health outcomes, they're going to be self-reported. And yes, that's what was done here.

Q And it was asking them to look back over past events?

A There were different questions, so it asked them about their mental health in the past month. It asked them about whether or not they attempted suicide in the past year. So there were some questions about more recent events and other questions about more distant events.

Q Okay. But that creates the potential people may misremember or misrecall events?

MR. STRANGIO: Object to form.

A Any time you have a survey that's asking about any -- someone to remember something from the past, there's the risk of recall bias.

Q What is that?

A That they may not remember exactly what happened in the past. So, for instance, if I did a survey and asked someone, what did you have for breakfast 12 years ago on this date, it would be a really high risk of recall bias. But in this survey we were asking things like, did you ever access pubertal suppression, which as we talked about earlier involves a whole process of working with a mental health profession, going to a clinic, working with your parents, having several sessions, getting a ton of information, forgetting whether or not that

happened to you in the past or whether or not you received that medication, I would imagine, is a lower risk of recall bias.

Q So I see on page 3 you limited the response to people who responded to the question, "Have you ever wanted any of the healthcare listed below for your gender identity or gender transition?"

And then limited to people who wanted pubertal suppression; is that right?

A Correct. So we wanted the control group to be people who ever wanted pubertal suppression because you wouldn't want your control group to be people who never wanted it because then they definitely weren't candidates, right. The appropriate control group would be people who desired it but weren't able to access it. So that's why we excluded people who never wanted it to begin with because they wouldn't really be relevant to the clinical population.

Q When people receive something they want, such as a medication, is that -- does that create a risk for a placebo effect?

MR. STRANGIO: Object to form.

A Yes.

Q And when someone does not receive a medical

intervention they want, does that create a risk that they may be frustrated?

MR. STRANGIO: Object to form.

A What you're alluding to is having a placebo controlled trial in an area like this, which isn't possible because these medications have obvious physical effects that you stop developing in your puberty, so there's no way to have a placebo controlled study in this area.

But yes, there's the potential for a placebo response any time somebody receives a medication.

Q So I think you -- you mentioned that you said that you controlled for a range of variables in this study; is that right?

MR. STRANGIO: Object to form.

A Yes.

Q Did you control for all potentially significant variables?

MR. STRANGIO: Object to form.

A It's never possible to adjust for every conceivable variable, but I think you can see there the list of control variables, that we adjusted for a wide range of them.

Q That's on page 3 where it says "Control Variables"?

A It's the page we have up right now, but I'm not

sure what page we're on.

Q I think this is 3.

MR. BARTA: Could you scroll down a little bit.

Q Is it in the middle column where it says "Control Variables"?

A Yes.

Q So I don't see in this list mental health interventions.

MR. STRANGIO: Object to form.

Q Is that there? Is that --

MR. STRANGIO: Object to form.

A Sorry, I'm going through and reading the statistical analyses because that's where we found which ones were applicable in that. Correct.

Q So that was not a variable that was controlled for?

A In this study, correct. But there are other studies that have looked at that.

Q So this study also only looked at people who currently identify as transgender; correct?

MR. STRANGIO: Object to form.

Q Or at the time of this -- who identified as transgender at the time of the data collection?

A Correct.

Q So it wouldn't include people who received pubertal

suppression and no longer identify as transgender?

A Correct. There are other studies in my declaration that looks more at that population and outcome and medical occurrences.

Q So turning to page 6 of your study, you say in the right-hand column, "We did not detect a difference in the odds of lifetime or past year suicide attempts where attempts were resulting in hospitalization."

Is that correct?

A Yes. And the next sentence explains that it's possible that we were underpowered to detect those differences, given that those outcomes are less frequently endorsed.

So again, when we were talking earlier about the importance of having a big sample size, you need an even bigger sample size if you want to detect a difference for very rare -- not -- or more rare outcomes. So suicidal ideation is more common than suicide attempts or suicide attempts requiring hospitalization. So the numbers were not as big for those, which is a potential explanation of why we didn't detect the difference.

There's a saying in statistics that not finding significant difference doesn't mean that

there's not a difference or there's not an association between those two variables. It could mean that, or it could simply mean that you didn't have enough people in your study to detect a statistically significant difference.

Q Okay. Do you -- so looking at page 5 of your study and Table 3. This lists the raw numbers of people reporting different outcomes such as suicidality, suicidal ideation, suicide attempts, and so on?

A Correct.

Q So I see you have -- so you said ideation, which had 45 people showed -- responding yes showed improvement; is that correct?

MR. STRANGIO: Object to form.

A No. So this is looking at -- on the left column, the people who received pubertal suppression. On the right are the people who desired but did not access pubertal suppression. And then it's the raw number of people who endorsed the different outcomes, like suicidal ideation in the last year.

Q And so if we're looking at lifetime, it looks like there were 67 people who received pubertal suppression who ideated on suicide and 3,062 who did not receive pubertal suppression who ideated on suicide; is that correct?

MR. STRANGIO: Object to form.

A Those are the raw numbers, but it looks like it's 75.3 percent of those who received pubertal suppression and 90 percent of those who did not.

Q And then if you go down one row and look at attempts, it looks at 37 people who received pubertal suppression and 1,738 who did not?

A 37 people from the pubertal suppression group endorsed a suicide attempt, which was 41 percent. 1,738 of the people who didn't access pubertal suppression endorsed -- oh, sorry, suicidal ideation in their lifetime. Oh, wait. No, sorry, you're on attempts. 1,738 people in the group that did not access pubertal suppression reported lifetime suicide attempt, which is 51.2 percent of that group.

Q So your hypothesis is that because the second group included only about 1,800 people and the first group included about, I guess, a little over 3,060 that that -- that the data on suicide attempts is not large enough to detect statistical significance?

MR. STRANGIO: Object to form.

A Correct. The numbers are -- I would need to pull up a calculator to calculate the exact difference,

but there are many -- far fewer suicide attempts than there are suicidal thoughts.

Q So are you -- so it seems -- if you're calling -- so do you think we need to be very cautious about approaching studies with less than -- that are looking at data from less than roughly 1800 people?

MR. STRANGIO: Object to form.

A No. It depends on how you're doing the study. So this is a study where we adjusted for lots of confounding variables or potentially confounding variables in that every time you do that, that decreases your statistical power significantly.

So for this specific type of study, you need larger numbers than a different type of study. Like a longitudinal cohort study that we looked at before, right, they detected statistically significant differences because they weren't adjusting for a ton of other variables which reduces your statistical power.

Q Okay. The -- so this study -- turning to page 70 of your study.

MR. BARTA: And then we'll take a break after we go through that, if that's okay.

MR. STRANGIO: Yeah, it works for me.

Q So in the first column on the left, in the third

sentence, you say, "Limitations include the study's cross-sectional design which does not allow for determination of causation"; correct?

A Correct.

Q And further down you say, "It is also limited by its non-probabilistic sample design"; correct?

A Correct, as we discussed, you know, earlier.

Q And then in the next column, you say, "Reverse causation cannot be ruled out. It is plausible that those without suicidal ideation had better mental health when seeking care and thus were more likely to be considered eligible for pubertal suppression"; correct?

MR. STRANGIO: Object to form.

A Yes. That's why it's helpful to look at longitudinal studies in addition to cross-sectional studies, because this study alone can't tell you if mental health improved over time or if just the pubertal blocker group always had better mental health than the non group. But as the longitudinal studies show you, there actually is a trend toward mental health gets better with time.

MR. BARTA: I'm finished with this study. Would now be a good time for a break?

MR. STRANGIO: Yes, let's do five.

MR. BARTA: Okay. Thank you.
(Recess taken.)
BY MR. BARTA:
Q So going back on the record, looking back at paragraph 14 of your declaration, the next study you talk about is a study from van der Miesen in 2020; is that right?
A Yes.
Q And this is another cross-sectional study?
A Yes.
Q And it looked -- compared 272 adolescents who received pubertal suppression with 178 -- or sorry, compared 272 who had not received pubertal suppression with 178 who did?
A Correct.
MR. STRANGIO: Object to form.
Are you going to pull this up?
MR. BARTA: I will in a moment. I'm just looking at the declaration.
MR. STRANGIO: Oh, I'm sorry. Okay. We don't have that. Sorry about that.
Q So the numbers of this cross-sectional study are much smaller than the numbers you had for your cross-sectional study on suicide attempts; right?
MR. STRANGIO: Object to form.

A Correct.
Q And you said that --
MR. BARTA: All right, so can you pull up this Exhibit 7, van der Miesen 2020.
(Deposition Exhibit 7 marked.)
Q So is this the study you mention in your declaration?
A Yes.
MR. BARTA: And just for logistic purposes, is -- do you guys have a hard copy of this or are we looking at the screen again?
A Screen.
MR. STRANGIO: Screen. Apologies.
MR. BARTA: No, that's perfectly fine. Just want to make sure we're making it user friendly.
A Although if you're -- are you going to be making comparisons between that and the last paper we were discussing? Because I'll grab the hard copy of the last paper we were discussing.
Q No, I'm going to be focused on this one.
A Okay.
Q So turning to page 700, when it talks about "Participants and procedure." In the second paragraph it says, "Therefore, in this cross-sectional study, the three groups that were compared consisted of (1) adolescents who had just started the assessment process, (2) adolescents diagnosed with GD who were on puberty suppression about to start GAH, and (3) cisgender adolescents recruited from the general population."
Do you see that sentence?

A Yes.
Q So, and it looks like from the -- I understand these -- the participants receiving gender-affirming care were all recruited from a clinic in the Netherlands; is that right?
MR. STRANGIO: Object to form.
A Yes.
Q So this is another non-probabilistic study?
MR. STRANGIO: Object to form.
A Correct, as any clinic referred study is going to be. They didn't randomly call phone numbers for their participants or anything like that.
Q And in this study, the authors did not follow a cohort of patients over time?
A This is a clinic where they do follow their patients over time and publish those results in different studies. But for this study, they were comparing at one point in time people who had undergone pubertal suppression with people who were about to undergo it and had not yet done so, and the general population of cisgender adolescents.
Q So this study doesn't allow you to detect changes in the participants who receive pubertal suppression?
MR. STRANGIO: Object to form.
A The study is looking at one point in time people who received pubertal suppression compared to people who did not.
Q And when you say "compared to people who did not," you're referring to cisgender children?
MR. STRANGIO: Object to form.
A There are two control groups, cisgender children -- or adolescents, rather -- and adolescents diagnosed with gender dysphoria who had not yet received pubertal suppression.
Q Are cisgender children --
A Sorry, I misspoke. They don't specify whether they've yet been formally diagnosed, but there are a hundred -- sorry, there are 272 adolescents who had just started the assessment process. So these were adolescents who came to a general clinic interested in pubertal suppression.
Q Okay. And the cisgender children mentioned here, would they be eligible for pubertal suppression?

MR. STRANGIO: Object to form.
A If any of them happen to have precocious puberty, the mean age is 15.4, so that seems unlikely. But it doesn't say what the minimum age is.
Q So from what you can tell, none of these cisgender children would be eligible for pubertal suppression?
MR. STRANGIO: Object to form.
A Unless they had precocious puberty or some other condition requiring that same medication.
Q Do you think it's appropriate to try to draw conclusions about the effects of pubertal suppression by comparing eligible with ineligible populations?
MR. STRANGIO: Object to form.
A I think the more relevant group is the group of adolescents who are seeking pubertal suppression. The Dutch will often include these cisgender control groups just to see how close their population gets to cisgender controls.
So usually in this field, people who get treatment do better than people who don't receive treatment. However, they still usually live in a society where they're experiencing transphobia, so harassment, discrimination, et cetera. So even

though they have better mental health than those who didn't receive gender-affirming medical care, they still tend to have worse mental health than the general population. So the Dutch will often look at that gap as well.
Their one cohort that was one of the reasons that paper was such a huge paper, the one we were just discussing where they follow up the people for the long period of time, from puberty blockers, gender-affirming hormones, to gender-affirming surgery, is that in that study, by the end, those people actually didn't have worse mental health than cisgender controls, which was remarkable given that people who don't receive gender-affirming treatment have such high rates of mental health difficulties.
Q So when you use the term "cisgender controls," control is -- is control being used in a different sense than you would use the term "control" in a randomized control trial?
MR. STRANGIO: Object to form.
A They're different studies, but control just means your comparison group without -- that doesn't receive treatment.
Q But this -- looking at comparing cisgender to

transgender children, does that allow us to isolate the effect of pubertal suppression on transgender children?
MR. STRANGIO: Object to form.
A No. And I don't believe that was their goal in having this extra group.
Q Okay. So you think the relevant groups for comparison are the people -- are the children before who have not yet started pubertal suppression and those who have?
MR. STRANGIO: Object to form.
A Those are the two interesting groups to compare, yes.
Q All right. So turning to page 703 of the study, the authors are discussing some of the limitations with their study. And in the right-hand column, they say, It should, therefore, additionally be stressed that the gender-affirming treatment described in the Dutch protocol is a highly protocol treatment with regard to eligibility criteria and psychological support, including affirmative psycho-education of GD for youth and parents or caregivers and continued discussion of psychosexual development with themes such as school and friendships but also dating and romantic

relationships. This does not imply that the findings of our study might apply to all transgender adolescents, as, for example, in other healthcare systems, psychosocial support is incomparable to psychological support received following the Dutch protocol.
Do you see that?
A They seem to be referencing citation 29. Are you able to scroll to what that is?
MR. STRANGIO: And I'm sorry, Shawn, is there any way you can zoom in a little? I'm sorry, I'm very much 40.
MR. BARTA: I think it's on the -- if you go to the next page, Shawn, citation 29.
Q All right. Can we go back to page 703.
A Wait. What was the citation number again?
Q 29.
A Okay. I'm not sure what that reference is.
Q Okay. Can we go back to the previous page, please.
MR. BARTA: Thanks, Shawn.
Q So it seems like the authors are saying that they can't -- their findings cannot be generalized to transgender youth without -- who are not receiving the same psychological support; is that right?
MR. STRANGIO: Object to form.

A I would really have to see citation 29 to know what they mean.
Q Do you agree that all the children participating in the study with the Dutch clinic received psychological support?
MR. STRANGIO: Object to form.
A Yes.
Q Did the -- so the study can't control for the impact of psychological support?
MR. STRANGIO: Object to form.
A Sorry, is your question still supposed to be related to this sentence or you've moved on to a different --
Q To this study. Can you control for psychological support when all participants in the study are receiving that support?
MR. STRANGIO: Object to form.
A Sorry, my question is, are you still referencing this single sentence or are you asking about the study in general?
Q I'm asking about the study.
A Can you go back to the -- I'd have to read through the "Methods" section.
Q Look at the methods that would be on page 700.
THE WITNESS: Do you mind scrolling down,

please. Can you go to the next page, please. Can you scroll down a bit more. Thank you.
A Okay. Correct, they did not control for whether or not or the type of therapy.
MR. BARTA: Scroll back up to page 700, please.
Q So in the section on "Participants and procedure," in the second paragraph there, it looks like the adolescents who started the assignment process were a mean age of 14.5 years, and the adolescents who were on pubertal suppression had a mean age of 16.8 years; is that correct?
MR. STRANGIO: Object to form.
A Yes, that looks correct.
Q So this study is comparing two groups that were about just over two years apart in age on average?
MR. STRANGIO: Object to form.
A Correct.
Q Can this study tell us anything about the long-term benefits of pubertal suppression?
MR. STRANGIO: Object to form.
A That was not the intention of the study, no.
MR. BARTA: And scroll over to page 703, please. Scroll down a little further, please.
Q So in the --

MR. BARTA: That's fine.
Q So in the right-hand column, do you see where it says, at the end of the second -- at the end of the paragraph, "Conclusions about long-term benefits of puberty suppression should thus be made with extreme caution needing prospective long-term follow-up studies with a repeated measure design with individuals being followed over time to confirm the current findings."
Do you see that?
A Yes.
Q Okay. So you would agree, this study alone cannot tell us anything about causation?
MR. STRANGIO: Object to form.
A I think that's unrelated to the follow-up period. Are you just asking about unrelated?
Q Unrelated.
A I would not use this one study in isolation to make the causal inference.
MR. BARTA: Okay. You can take this down.
So I want to introduce as our next exhibit, 8, the Achille 2020 study.
MR. STRANGIO: I do have that one. So that is what Jack is holding now, but I don't have it in front of me. So this is helpful on the screen,

thank you.
(Deposition Exhibit 8 marked.)
Q Dr. Turban, is this the -- another study you cite in paragraph 14, footnote 3?
A Yes.
Q And this is another longitudinal study of adolescents?
MR. STRANGIO: Object to form.
A Yes.
Q So looking at page 3 of the study. Or sorry, it looks like there were a total of 50 participants in this study in Table 1; is that correct?
A A total of 50?
Q Yes.
A Yes, that's correct.
Q And then on -- do you consider 50 a large number of participants?
MR. STRANGIO: Object to form.
A No. Another thing to highlight in statistics is if you detect a statistically significant difference, then your sample size was sufficient, even if it's not a huge number. So if you detect a statistically significant difference, you can say with what is the standard level of certainty that we usually use in peer-reviewed literature that

that difference is real.

However, if you don't find a statistically significant difference, that doesn't tell you one way or another.

Q So I see from -- so then turning to page 4.

MR. BARTA: Scroll down, please.

Q So I see the left-hand column, at the bottom, it says, "Our study only extended for the first 12 months of endocrine intervention."

I read this as saying that the study only looked at people 12 months past hormonal intervention; is that right? Or sorry, pubertal suppression.

MR. STRANGIO: Object to form.

A I believe when they say that they're referencing all of the interventions, not just pubertal suppression.

Q Okay. Do you know how long the study lasted?

A It looks like it was a total of a year, so time point zero, six months after endocrine intervention, a year after endocrine intervention. But different participants were on different endocrine interventions. They were all receiving some sort of gender-affirming care. As you can see in Table 2 --

Q Uh-huh.

A -- some were receiving just puberty blockers, some were receiving cross-sex hormones, and some were receiving both.

Q Okay. Thank you for clarifying.

So I'm looking at Table 1 on page 3, and it looks like Table 1 is showing that 90 percent of the participants were in counseling; is that correct?

MR. STRANGIO: Object to form.

A Correct.

Q And 34 percent were on psych medication; is that correct?

A Correct.

Q Does that -- do those psychological interventions limit the conclusions that could be drawn from the study?

MR. STRANGIO: Object to form.

A I'd have to look at their regression methods. Hold on one second. Sorry, maybe more than one second. It's a long section to read.

So they did adjust for -- if you go to page 3 where it says "Regression analysis." So they explained, "We conducted a series of regression analyses to investigate preliminary trends in the

data when controlled for reported psychiatric medications and engagement in counseling." The "results are given in Table 4."

Given their modest sample size, particularly when stratified by gender, most predictors didn't reach statistical significance. Again, because low sample size, hard to say one way or another. That being said, the effect size values were large in many models and MTF so trans girls pubertal suppression did reach a significant level.

So after adjusting for the -- removing the impact of psychiatric medications and counseling, for the trans girls, they did detect better mental health.

Q So if you -- so to follow up on that. So 45 of the 50 were in counseling; is that right?

MR. STRANGIO: Object to form.

A Correct.

Q So would controlling for counseling require you to remove 45 of the 50 participants?

A No.

Q But you would only have five participants who would be unaffected by counseling?

MR. STRANGIO: Object to form.

A It's true that there are five who didn't have

counseling, but that -- you don't remove all the participants. That's not how the analysis works. You're comparing -- you're looking at the association between accessing the interventions and the mental health outcomes, and you're adjusting for that variable that's different in other groups. It's not really the same as just removing them.

Q But if you only have five people who did not receive an intervention, is that -- that makes -- that seems like a very small group from which to try to draw conclusions from?

MR. STRANGIO: Object to form.

A So again, in statistics, if you have a low sample size, you're at risk of being underpowered. But if you detect a difference, then your sample size was sufficient to detect that difference.

Q Okay. Well, let's flip to page 4, then, to look at some of the differences they report in Table 4.

So is Table 4 showing the results of their regression analysis?

A Yes.

Q And I see there's a column titled P.

Do you see that?

A Yes.

Q What is that -- what does the P stand for here?

A It gives you a general sense of whether or not something is statistically significant. So a standard cutoff is less than .05 would be considered statistically significant.

Q So if we're looking at this -- at the female to male column, so on the right it looks like none of the P-values approached a statistical significance; is that right?

A That is the definition I would use. The authors here, when they described the results, they say for female to male participants, cross-sex hormone therapy approached statistical significance for quality of life improvements, the .08. I personally would not agree with calling that statistically significant. And some people would consider that a substantial finding or important finding, suggesting that there was better quality of life.

Q Okay. How many of the participants were female to male?

A It looks like 33.

Q What percentage of the total population was that?

MR. STRANGIO: Object to form.

A Of the entire study?

Q Yeah.

A 33 divided by 50.

Q Is that about two-thirds?

A I don't want to get mental math wrong under oath. But yeah, I don't have a calculator.

Q Does that sound too far off?

A Close enough.

Q So for two-thirds of the -- about two-thirds of the participants, there's no statistically significant improvement?

MR. STRANGIO: Object to form.

A Repeat the question.

Q Is there -- there is no statistically significant improvement for about two-thirds of the participants?

MR. STRANGIO: Object to form.

A I'm not sure I really understand the question, but I can say for the female to male participants, which is its own sub population, of them, they detected what someone called a trend towards statistical significance for cross-sex hormones after adjusting for their P and psychiatric medications. I personally wouldn't consider that statistically significant.

Q Okay. So looking at Table 4 in the male to female column, it looks like there's only one value that reaches statistical significance; is that right?

MR. STRANGIO: Object to form.

A As you pointed out earlier, their sample size was small, so in places where they didn't -- things were not statistically significant, that doesn't mean that that -- that the treatment didn't improve the mental health one way or the other. It doesn't give you any information. You can't say that it didn't work. You can just say that in this sample size, in their study design, they couldn't tell you one way or the other on those ones.

The only one they could tell you one way or another is that on the CESD-R, puberty suppression was associated with better scores when people received puberty suppression who were trans girls, even after adjusting for therapy and psychiatric medications.

Q So my question is, did they only show statistically significant improvement on one measure?

MR. STRANGIO: Object to form.

A The only measure that they could say one way or another was the CESD-R.

Q Further up on page 4, when they're talking about the data, it says, "Our data are somewhat limited by the fact that the majority of our participants had at least one supportive parent who was willing to facilitate medical and mental health intervention for the child and therefore may not apply to all transgender youth. In addition, regular visits with the medical team itself could influence depression and quality of life. Past studies have shown that having support from a multidisciplinary medical team - mental health provider, physician, surgeons - helped with quality of life and mental health."

Do you see that?

A Yes.

Q Do you agree that the authors believe that the results are limited by mental health interventions even after adjusting for them?

MR. STRANGIO: Object to form.

A That's not how I read this.

Q How do you read it?

A So when they say past studies have shown that having scored for multidisciplinary team, that citation is the paper we were talking about earlier. So I think the only point they're making there is that the standard of care in this area is to have a team that includes a mental health provider, physicians, surgeons, highlighting that

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their team was similar to that.
Q So can the -- can you isolate the effects of pubertal suppression from this study without the multidisciplinary approach?
MR. STRANGIO: Object to form.
A All participants in this study were part of a multidisciplinary -- had a multidisciplinary team, which is the standard of care, which is how this care is meant to be provided. So the study can't tell you anything about if you were practicing outside of the standard of care.
Q Can you tell us -- do you -- are you in a position to know whether all physicians in the U.S. practiced the standard of care?
MR. STRANGIO: Object to form.
A No.
MR. BARTA: So I think we're done with this study. I'd like to introduce as Exhibit 9 Costa 2015.
(Deposition Exhibit 9 marked.)
Q Is this another study that you cite in your declaration, Dr. Turban?
A One I frequently cite, but I'm having trouble finding where I cited it.
Q I believe footnote 6, on paragraph 14.

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A Yes.
Q So this is another longitudinal study of patients from a clinic.
A This is an unusual study. So it's a longitudinal cohort study, but there are two cohorts. So one --
Q What are the two cohorts?
A So both cohorts receive psychological support for a period of six months, and then one group gets puberty blockers for six months. Then the following just gets continued psychological support.
Q So it's comparing those two groups, how they -- comparing those two groups over time?
A There are many different comparisons that they make, both within and between groups.
Q And all of these participants came from a single clinic?
MR. STRANGIO: Object to form.
A Correct. I believe this is from the Tavistock clinic in the UK.
Q But this would be another non-probabilistic sample?
A Yes.
Q And all the participants in this received psychological support for the duration of the study; is that right?

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MR. STRANGIO: Object to form.
A Correct.
Q So if we flip to page 2211.
MR. BARTA: Can you scroll down further.
Q So this -- in the "Results" section, it looks at them at -- or compares results at four different times; is that correct, Dr. Turban?
A Sorry, where are you looking?
Q So in the "Results" section, it's reported -- let me start over.
So on page 2211, it's reporting results from both the eligible and delayed eligible adolescents?
A In the figure?
Q In the figure.
A Yes.
Q And it shows that delayed -- that, you know, initially both groups improved with psychological support?
MR. STRANGIO: Object to form.
A Correct.
Q So then if we look at page 2212 --
A Sorry, before we move on, I just want to -- the important thing from this figure is that they both improved with psychological support for the first six months. Then in the group that continued to

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receive psychological support did not improve any further, whereas the group that received pubertal suppression did continue to improve.
Q Okay. So on page 2212 in the "Discussion," the first sentence says, "Results from this study indicate that psychological support is associated with better psychosocial functioning in GD adolescents, especially if presenting with psychological/psychiatric problems."
Is that correct?
MR. STRANGIO: Shawn, can we scroll?
MR. BARTA: Oh, I apologize, Chase.
MR. STRANGIO: That's okay. Thanks.
A I think that next sentence is also important, though, that "Moreover, puberty suppression was associated with further improvement in global functioning."
Q And then starting at the bottom of page 2212 and carrying onto 2213, it comments on the first six months saying, "The GD adolescents' improved global functioning after only 6 months of psychological support may have different explanations. First, it could indicate a timely addressing of psychosocial problems contributes to enhanced psychological well-being."

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Do you see that?
A Yes.
THE WITNESS: Sorry, Chase, can you see?
MR. STRANGIO: Shawn, if you could just scroll again. Thank you.
MR. BARTA: Sorry, we're on the next page, Shawn.
MR. STRANGIO: There we go. Thanks.
Q So this is one of the authors' explanations for the improvement they saw during that first six months?
A It looks like they're listing possible reasons, and that's one that they list.
Q And the second explanation, possible explanation they give, it says, "Second our clinical experience suggests that patients attending a gender unit are pleased in the knowledge that puberty suppression will be performed within a reasonable time and refer distress reduction because of their accepted and understood requirements. Moreover, the initiation of pubertal suppression may have a psychological meaning that which per se could be fundamental in reducing distress. In any case, data are too limbed to express conclusively."
Do you see that passage?
A Yes. It's similar to, if you can imagine, any

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medical condition, if you think you're not going to get treatment for it, that would be depressing, and if you find out you can get treatment for it, your mental health will improve.
Q And then the authors also discuss some other limitations further down on page 2213. One is that they focused --
MR. BARTA: Sorry, scroll down, please.
Q They say, "In the present study, there are some limitations. Even if psychosocial functioning is of crucial importance to identify clinical or sociocognitive difficulties, we focused only on one measure of psychosocial well-being. Also, the study sample was relatively small and came from only one clinic. Most importantly, despite the findings seem to suggest a cumulative and increasing over time positive effect of psychosocial support and GnRHa on young GD patients' well-being, results could also have different explanations because of the study design. For instance, getting older has been positively associated with maturity and well-being."
Do you see that passage?
A Yes.
Q So in this passage they've talked about some of the

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limitations we've already discussed. One is this is a non-probabilistic sample?
MR. STRANGIO: Object to form.
A I think that's an unusual criticism to make of a study of a clinical intervention because those are essentially never probability samples. You've -- right, as I've described, to do a probability sample, looking at the impact of any medical intervention, you would have to randomly choose people from the entire U.S. population and hope that you get enough people with the given condition that you have to give some of -- for some of them to get treatment and some of them not to. So that's just not a realistic study design for this type of research.
Q The authors, nonetheless, consider their own study sample to be relatively small and limited by the fact it came from only one clinic; correct?
MR. STRANGIO: Object to form.
A I don't see them anywhere saying that they think it would be reasonable to do a probability sample.
Q That's not my question. My question is, do the authors themselves consider their study limited by the fact it only involved a single clinic and a small sample size?

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MR. STRANGIO: Object to form.
A They do say that in the discussion.
Q The authors also say that there could be alternative explanations such as getting older; is that correct?
MR. STRANGIO: Object to form.
A It's hard for me to tell if they are saying that for the whole impact or just for the psychological support part because obviously both groups are getting older and we're looking at how some groups plateaued in their mental health and some groups did not.
Q So I think further in -- as part of that same discussion of alternative explanations, they talk about how they don't think they could design a randomized control study for dis- -- that includes disallowing pubertal suppression.
Do you see that?
A Can you repeat the question?
Q Do you see in that -- after the sentence on getting older, the authors talk about how they don't think you can design a study that dis- -- in which puberty suppression is disallowed?
A You're asking if they're saying that you can't design a study in which pubertal suppression is

disallowed?

Q Do you see the discussion of a hypothetical study that involves disallowing puberty suppression?

A They say that ideally a randomized control trial would be performed, but they don't imply that that would be ethical or possible.

Q Correct. But I guess the only question is, it seems like from the context this sentence about getting older is talking about the entire -- the effects of pubertal suppression, not just psychological support.

A That's not clear to me.

Q So do you agree that this study by itself can't establish that pubertal suppression causes improved mental health outcomes?

MR. STRANGIO: Object to form.

A I wouldn't use any of these individual studies to draw conclusions. I would draw my conclusions based on the full published body of literature. But correct, I would not use this study in isolation to say there's a causal impact.

Q So I think we just went through every study cited in paragraph 14 on pubertal suppression; is that right?

A Yes.

Q And you agree that taking each study individually -- let me rephrase that.

Each study individually cannot establish causation; correct?

MR. STRANGIO: Object to form.

A No single study can draw causal inferences in isolation.

Q At what -- at what point in time do you think causation was established?

MR. STRANGIO: Object to form.

A So these studies all have different strengths and limitations. The longitudinal studies can show you a temporal relationship between this treatment and improved mental health. As you saw, one was able to separate out the impact of psychotherapy and psychiatric medications from the treatment. But those studies can't tell you anything about the people who get treatment do better than those without.

Then the cross-sectional studies answer that question, showing you that those who get treatment do better than those who didn't get treatment, so that the longitudinal studies weren't just because people all improve over time, but, in fact, people who get treatment end up better off than people who

desire but can't access the treatment.

Then the Costa study is interesting in that it kind of provides both, and also looks at the psychotherapy question again where they give people the psychotherapy, and that improves mental health. But if you don't give people puberty blockers, their mental health stays where it is, and those who get puberty blockers continue to increase. So all of these are giving pieces of the puzzle.

Q If you take out -- if you subtract any one of these studies from the analysis, do you think you would still be able to say there's causation?

MR. STRANGIO: Object to form.

A I think it's lucky that most of these studies have been replicated. So there's several longitudinal studies, and similarly, there are two cross-sectional studies that had similar findings. So all of that reinforces this notion.

Q My question is, if you subtract any one of these studies, would you still have causation?

MR. STRANGIO: Object to form.

A My answer is that these studies in some ways do fit each other, so you can remove one and still draw similar conclusions.

Q What is the minimum number of studies listed here

that you would need to say there's causation?

MR. STRANGIO: Object to form.

A It's not really how we evaluate literature. I guess it's an interesting hypothetical. But if you had one very convincing longitudinal study and one very convincing cross-sectional study, that both were able to adjust for important variables, and keep in mind that we're talking about an area of medicine where you need to do something with patients and we cannot do randomized control trials, I think this is a very solid level of evidence, even if you were to remove some of the studies.

I don't have an answer for you that there's a set number of studies you need to recommend a treatment or say causation. That's not really how we think about this.

Q Well, let's take it chronologically. So the first study we talked about was the 2011 de Vries study; correct?

A Yes.

Q And you agree at that point if you just have 2011 de Vries, you can't say anything about causation?

MR. STRANGIO: Object to form.

A Yeah, with just that study, I think you would be

left with a major question of, would these people have had better mental health without the treatment. Although I think you'll see in their discussion that in the, right, real world, practicing medicine, we knew that this was a population where their mental health tended to deteriorate without any treatment, right. Even if it wasn't in this study, that was known clinically.

So the fact that they saw that their mental health was improving and not deteriorating was a major finding. So if you were a doctor with one of these patients who had severe gender dysphoria, you might consider this medication after talking about the risks and benefits and the fact that this is the only study we have. But if you have a patient who's suicidal or has severe gender dysphoria, then you might think about this.

Q So I want to focus on the causation question for a minute. Then we'll turn to some of the treatment implications.

So the next study that came out chronologically is the de Vries 2014; is that right?

MR. STRANGIO: Object to form.

A Yes, I believe that's correct.

Q If you put 2011 de Vries together with 2014 de Vries, do you have causation?

MR. STRANGIO: Object to form.

A 2014 de Vries didn't so much give you more information about pubertal suppression as that it added additional information of longer term follow-up with gender-affirming hormones and gender-affirming surgery, so no.

Q The next study was Costa 2015. If you add 2011 de Vries, 2014 de Vries, and 2015 Costa, do you get causation?

MR. STRANGIO: Object to form.

A That starts to add much stronger evidence for causation because you, for the first time, see that those who get just therapy don't do as well as those who get therapy and hormones. There's still the limitation there that that wasn't -- those groups are different in some ways. They're the delayed eligible versus the immediately eligible. So there you're getting stronger implication of causation.

But the reason I'm questioning you on this line of questioning is that everything in medicine is about statistics and probability, right. So you're never going to -- nowhere in medicine can

you ever say something with a hundred percent certainty of causation. You can say things are statistically significant. You can say all evidence is pointing in that direction. You can say we've accumulated more and more evidence. We've yet to see evidence of people's mental health getting worse. But it's not like people are sitting down and saying how many studies; is this one more study going to be the answer.

Q So do you think 2011 de Vries, 2014 de Vries, and 2015 Costa established causation?

MR. STRANGIO: Object to form.

A Again, what do you mean by "established causation"?

Q Established that pubertal suppression causes improved mental health.

MR. STRANGIO: Object to form.

A I think it makes a strong argument with the statistics, yes.

Q Is that a yes on establishes causation or no on causation?

MR. STRANGIO: Object to form.

A Again, the way statistics work is I can never say that something is a hundred percent certain. But you're asking when you can be certain, and that's just not how statistics work.

Q I'm not asking about certainty. I'm asking about whether you think you have established causation.

A Like when I would think that there's strong evidence for causation, that it's likely causal?

Q We can start there. When is it likely causal?

MR. STRANGIO: Object to form.

A Yeah, I think after the Costa study you're starting to feel more convinced that it's causal. It addresses the -- some of the major questions have been addressed, like what if you just did therapy without the intervention.

Q Is there a way to assign a P-value to what you have -- to the analysis?

MR. STRANGIO: Object to form.

A Yes.

Q How would that be done?

A It's what they did in the Costa study, that they did a statistical analysis of where their global functioning was before starting the puberty blockers and after, and followed that P-value was met a standard threshold of statistical significance, which again is not certainty but a strong argument. Then when they looked at the group that did not receive pubertal suppression and looked from that time point to six months later of

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more therapy, it did not have a statistically significant improvement.

Q Maybe let me rephrase.

So you say you can put together 2011 de Vries, 2014 de Vries, and 2015 Costa and have strong evidence of causation. Can you assign a P-value to the inference you're trying to draw?

MR. STRANGIO: Object to form.

A That's not how statistics work, no.

Q Can you assign a level of confidence to the inference you're trying to draw?

A I can give you my subjective expert opinion based on the evidence and the many P-values that are involved in looking at these different studies together. But there's not a way to assign a P-value to that, no.

Q The -- I want to ask -- turn to something else you mentioned about the, you know, when you're approaching something as a clinician, how do you decide, you know, when, what to treat. When someone is advocating for a new treatment in psychiatry, generally, who has the burden of proof to show that the new treatment will be effective and safe?

MR. STRANGIO: Object to form, calls for a

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legal conclusion. I'm not sure where burden of proof is coming from and as to what body.

Q Let me -- well, let me rephrase.

So is the -- in psychiatry, if someone comes to you with a condition, is the default to do -- what is the default treatment?

MR. STRANGIO: Object to form.

A It depends on the condition.

Q So let me try asking this another way.

If someone comes to you with a condition for which they're -- and the treatment and the proposed treatments for that condition have not been studied for efficacy or safety, is the -- what is the default response?

MR. STRANGIO: Object to form.

A Are you asking if it would be standard practice to prescribe a medication that's not -- that has no FDA approval?

Q That's not my question. So let me try asking it a different way.

Well, let me think about that, actually, just to see if I can come up with a clearer way. And maybe this would be a good time to take the lunch break so we could get into that afterwards. But is that okay for the rest of you all?

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A Works for me.

MR. STRANGIO: That works. So let's say 40 minutes. I'll do the math later with a calculator. But we'll come back in 40.

MR. BARTA: Okay. And if you are ready to go before then, just holler and we'll -- I'll leave the speakers on.

MR. STRANGIO: Thank you.

MR. BARTA: Thank you so much.

(Lunch recess taken.)

BY MR. BARTA:

Q All right. We're going to move to a new topic and start talking about gender-affirming hormones.

What are gender-affirming hormones?

A Gender-affirming hormones are medications that are meant to physically align one's body with their gender identity, most commonly estrogen for trans women or testosterone for trans men.

Q When are gender-affirming hormones administered?

MR. STRANGIO: Object to form.

A I'm not sure I understand the question.

Q At what stage in development are they first administered?

MR. STRANGIO: Object to form.

A It depends on the patient.

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Q Is there a typical answer?

MR. STRANGIO: Object to form.

A So the older Endocrine Society guidelines said, at the earliest, age 16. And then the most recent Endocrine Society guidelines, based on there being more clinical experience, noted that you might consider earlier than that on a case-by-case basis. The reason for that is, as we mentioned earlier, the longer you're on pubertal suppression, the more you're falling behind on bone density.

So if you were to start gender-affirming hormones earlier, that person's going to achieve -- get back to normal bone density more quickly. So you can imagine if there were a patient who came out as trans at a very young age, let's say seven or eight, had been living in their affirmed gender for many years, started a puberty blocker around age 12, now that, you know, they're 14 or 15 and they're falling behind on bone density, and also they're having an experience where all of their peers are going through puberty, but they're not. And often these kids will say that that's just an uncomfortable, awkward experience that they're not socially in sync with their peers.

And then in this example, it seems relatively

clear that that person has had a very stable gender identity for a very long time. It seems unlikely that they're going to want to go through their endogenous puberty, then you might consider the medication a bit earlier.

Q Once a transgender adolescent starts taking gender-affirming hormones, how long do they continue taking those?

MR. STRANGIO: Object to form.

A It also depends on the patient.

Q Is it usually a matter of months, years? Can you give me a ballpark?

A It takes months for there to be substantial physical effects that are noticeable. So usually if somebody had physical gender dysphoria and they wanted to have the physical changes of hormones, a month or two wouldn't be enough. But we've had patients who have taken them for a few years, particularly testosterone, and have felt that they had enough masculinization or enough male puberty from those few years that they were okay stopping them. Often because they just find it a hassle to have to do the injections or pick up the medications regularly.

Q When you say enough masculinization, do you mean

enough change in physical appearance?

MR. STRANGIO: Object to form.

A Yes.

Q Do you know when gender-affirming hormones were first administered to minors?

MR. STRANGIO: Object to form.

A So the first publications in the peer-reviewed literature came from the Dutch group. They reported about a trans masculine adolescent who, when he was very young, wrote a suicide note to his family, saying that he wanted to die if he had to continue to live in a female body, and the endocrinologist gave that young person a puberty blocker, then later gender-affirming hormones. And then they published the paper after that person had gender-affirming surgery and was doing quite well.

So if you do the math, based on when that was published and going back, somewhere around the 1980s. But there's also been some academic literature from historians that have looked back at letters that were written back and forth between patients and physicians that showed that outside of academic medicine, there were physicians where families were reaching out really desperate for gender-affirming hormones for minors, going at

least a few decades before the 1980s.

Q Are there psychological reasons why someone would not be eligible for gender-affirming hormones?

MR. STRANGIO: Object to form.

A So most guidelines emphasize that other mental health conditions need to be reasonably well controlled.

So as we were talking about earlier, if somebody's mental health were so severe, let's say they were acutely suicidal and that they needed admission to hospitalization or they wouldn't be able to come to follow-up appointments or blood draws to make sure that they're doing everything that's necessary to safely be on those medications, then that could be a psychological reason that somebody would be considered ineligible.

Q Are there medical reasons why someone would be considered ineligible?

MR. STRANGIO: Object to form.

A I'm not aware of absolute contraindications, but there are situations where patients would be unlikely to want to take hormones.

Again, earlier we talked about how estrogen can increase your blood clotting risk. It doesn't seem to be a huge risk because you're bringing

estrogen into the same levels as cis women. It's more very, very high levels where you get a higher risk of clot. But if you had an underlying blood clotting condition, that might be a reason that that would be not an absolute contraindication but a potential reason not to take them.

Also if you had any kind of cancer that was hormone responsive, like a testosterone or an estrogen responsive cancer. Those are relatively rare.

Q Which medical provider would typically evaluate someone for medical contraindications?

MR. STRANGIO: Object to form.

A The medical contraindications would be from the nonmental health physician, so usually a pediatric endocrinologist.

Q So that's not something you would do?

A No.

Q So looking at paragraph 15 of your declaration. I'll give you a moment to turn there.

A I'm there.

Q Okay. The first sentence reads, "Peer-reviewed research studies have, likewise, found improved mental health outcomes following gender-affirming hormone treatment (e.g., estrogen or testosterone)

for individuals with gender dysphoria, including adolescence."

Is that -- do you see that?

A Yes.

Q Are you saying -- do you believe the peer reviewed studies mentioned here show that gender-affirming hormone treatment causes improved mental health?

MR. STRANGIO: Object to form.

A I believe when you take all of the research together, again, no single study is going to convincingly show causation. Also, these are going to have strengths and limitations. But when you look at the body of research as a whole, there's a strong indication that it's causal.

Q To be clear, none of the -- to be clear, none of these studies individually establish causation?

MR. STRANGIO: Object to form.

A Correct.

Q I want to look at the studies you do talk about here. One of them is -- which I will bring up as Exhibit 10, is Chen 2023.

MR. STRANGIO: And for clarity, Jack has a printed version in front of him, and I'm looking on the screen.

MR. BARTA: Okay. So just in general, are you

always going to be looking on the screen, Chase?

MR. STRANGIO: Yeah, I am. But it'll be --

MR. BARTA: Well, don't worry about it. We'll go slow and make sure we scroll.

MR. STRANGIO: Thank you.

(Deposition Exhibit 10 marked.)

Q Dr. Turban, is this the Chen 2023 study you mentioned?

A Yes.

Q What type of study is this?

A It's a longitudinal cohort study.

Q Where were the youth recruited from?

MR. STRANGIO: Object to form.

A So these were the results of an NIH-funded foresight study, but let me go to the text just to make sure. So from gender clinics at Lurie Children's Hospital in Chicago, UCSF Benioff Children's Hospital in San Francisco, Boston Children's Hospital, and Children's Hospital Los Angeles.

Q Okay. Looking at page 241, I think just below where you were reading, it says, "All participating clinics employ a multidisciplinary team that includes medical and mental health providers and that collaboratively determines whether gender

dysphoria is present and whether gender-affirming medical care is appropriate."

Do you see that?

A Yes.

Q So this would be another study where youth are receiving both medical and mental health support?

MR. STRANGIO: Object to form.

A Yes. It's not -- there's involvement from mental health professionals and medical professionals in that multidisciplinary team. Some of these clinics have a mental health provider who's embedded in the clinic, and then they work with therapists from the community as well. But yes, all of these clinics would have involvement from both.

Q And since this is a study drawn from the population of clinics, this population would not necessarily be representative of the entire U.S. transgender population?

MR. STRANGIO: Object to form.

A I think you can assume that for any study looking at a medical intervention, yes.

Q So on page 242, towards the bottom, on the right-hand side, it looks like there were 315 participants who were assessed up to five times over a period of two years.

Do you see that?

A Yes.

Q So there's -- and it looks like, data -- and then it goes on to say data were available for 81 of all possible observations.

Do you see that?

A Yes.

Q So just to make sure I'm right, this is 315 participants involved in the study; right?

A Yes.

Q And they had complete data on -- or they had data for -- on 81 of their -- percent of their interactions?

A Of all possible observations.

Q And they only looked at it two years; right?

MR. STRANGIO: Object to form.

A Correct. They looked at over a period of two years.

Q Can this paper tell us anything about the effects of gender-affirming hormones after two years?

MR. STRANGIO: Object to form.

A No.

Q So turning to the next page on 243. In the left-hand column under "Sample Characteristics," close to the bottom of the paragraph, the authors

say, "Two participants died by suicide during the study (one after 6 months of follow-up and the other after 12 months of follow-up)."

Do you see that?

A Yes.

Q What does that make the suicide rate among participants?

MR. STRANGIO: Object to form.

A Yeah. Again, I don't have a calculator, so I don't want to do mental math for you, but it's two of the 215.

Q Is that higher than the suicide rate of the general population?

MR. STRANGIO: Object to form.

A I'm not sure, but I would expect, since it's a sample of transgender patients who experience substantial stigma and harassment and discrimination, that we know worsen mental health outcomes and drive suicidality, that I would expect that it would be.

Q Is two out of 315 higher than the rate of suicide among the transgender population?

MR. STRANGIO: Object to form.

A I can't think of a specific study that followed 315 -- or even just followed trans youth for two

years, so I don't have that statistic to give you.

Q So in paragraph 15 you say that the study showed improvements in, quotes, anxiety, depression, and life satisfaction; is that right?

A Yes.

Q Are you aware that the authors of Chen 2023 originally set out to measure other characteristics, including gender dysphoria, self-injury, suicidality, and quality of life?

MR. STRANGIO: Object to form.

A I'm going to go to another section to check all of their outcomes.

Sorry, so I have the list now. Which ones are you referencing again?

Q I said, are you aware that the authors, when they published their proposal for the study, were -- said they were also going to measure gender dysphoria, suicidality, and quality of life?

A Where are you drawing that from?

Q I'm not referring to a specific passage of the study. I'm just asking if you're aware that the authors originally set out to measure those other characteristics?

MR. STRANGIO: Object to form.

A I haven't seen their original study proposal, so I

wouldn't know what full battery of instruments they considered using.

Q Do you see data reported on those issues in the study?

A All right. So specifically quality of life. Which other ones?

Q Suicidality and gender dysphoria.

A When they say "gender dysphoria," they may mean appearance congruence, and I see that they reported that appearance congruence had a significant, within participant change, in the direction that they expected, which was an improvement. They say life satisfaction increases significantly, which is a quality of life measure.

Q What about suicidality?

Dr. Turban, if you're not sure, we can move to a different issue.

A So -- it's a little complicated. So they used the Beck Depression Inventory, which I believe has a suicidality question, but I'm not sure. So it's possible that that was kind of subsumed under their depression outcome in their analyses as opposed to reporting on it separately.

But they do specifically report in Table 2 the number of patients who had suicidal ideation during

a study visit or death by suicide. But from the best I can tell -- I don't have the Beck Depression Inventory II in front of me. Many depression measures like that have suicidality included, so that may or may not be in there. I'm not sure.

Q Okay. So individually, can this study show that gender-affirming hormones caused improved mental health?

MR. STRANGIO: Object to form.

A Again, causal inferences are more complicated than that, and generally one would not use a longitudinal cohort study to imply causation. But they used somewhat sophisticated statistical modeling here. So if you go to the limitations section, starting at 247.

Q Well, maybe let's take the limitations individually then. So that would be -- let's make it easier.

All right. So on 247, it says, "Our study has certain limitations"; right?

A Yes.

Q And one limitation they discuss is "Because participants were recruited from four urban pediatric gender centers, the findings may not be generalizable to youth without access to comprehensive interdisciplinary services or to

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transgender and nonbinary youth who are self-medicating with GAH."

So that's one limitation; right?

MR. STRANGIO: Object to form.

A Yes, it's generally, as we've been saying, that any of these studies that are looking at outcomes following the standard of care can't tell you what will happen if you don't follow the standard of care. In terms of the research being from urban academic centers, yeah, certainly urban versus rural could potentially be different. But academic centers are the ones that have the abilities to conduct this kind of research. So that is just an inherent challenge with research.

Q And so moving to page 248, towards the bottom, they say, "In addition, despite improvement across psychosocial outcomes on average, there was substantial variability around the mean trajectory of change. Some participants continued to report high levels of depression and anxiety and low positive affect and life satisfaction, despite the use of GAH."

Do you see that?

A Yes.

Q What does it mean by "substantial variability

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around the mean trajectory of change"?

A It just means that the treatment did not work for a hundred percent of people.

Q All right. So third -- so let's turn to page 249. It says at the top, "Finally, our study lacked a comparison group, which limits our ability to establish causality."

Do you see that?

A Yes. This is where I was trying to emphasize the -- that normally you wouldn't use a longitudinal cohort study to look at causality, but this next sentence is the point I was making. So they say, "However, the large effects in parallel-process models examining associations between improvements in appearance congruence and improvements in psychosocial outcomes provides support for the concept that GAH may affect psychosocial outcomes through increasing gender congruence."

So by showing that, the treatment tracks along with gender congruence, and gender congruence tracks along with improved mental health, that gives you more of a causal argument. But, again, you wouldn't --

Q But --

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A -- use a single study to infer causation. But this one shows it more than the usual longitudinal cohort study would.

MR. BARTA: So let's take this down and turn to the next study you talk about which we'll introduce as Exhibit 11, Allen 2019.

(Deposition Exhibit 11 marked.)

MR. BARTA: Sorry, Shawn, did you hear that I'd like to introduce as Exhibit 11 Allen 2019. Thank you.

Q Dr. Turban, is this Allen 2019?

A Yes.

Q And what did this study look at?

A This is another longitudinal cohort study that looked at the impact of gender-affirming hormones on suicidality.

Q And how many participants were in this study?

A This one had 47.

Q Is that a small sample size?

MR. STRANGIO: Object to form.

A It's a subjective question. Again, sometimes you can have a small sample size and be adequately powered to detect statistically significant differences, in which case that's a useful finding. Sometimes your sample size is small and so you

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don't have statistically significant findings. Certainly any time you have a smaller sample size, you're less likely to find statistically significant differences, but this study did.

Q And this study is of youth from a single gender clinic?

A I believe so, but let me make sure.

Yes, it looks like all the participants were found at Children's Mercy Hospital in Kansas City.

Q So looking at page 303 under "Method Participants," it looks like it says participants were eligible if they had been treated with GAH for at least three months; is that right?

A They were eligible if they had completed three months of gender-affirming hormones by the end of data collection, not the beginning.

Q Okay. And looking at page 304, at the top, it says, "The range of treatment length was 113 to 1,016 days (M=349, SD=193)."

Do you see that?

A The range of treatment length was 113 to 1,016 days. Yeah, the median was 349 days and the standard deviation was 193.

Q So does that mean that the median length of treatment for participants in the study was 349

days?
A Yes.
Q And then the next sentence says, "For most of our sample (90 percent), duration of treatment was at, or under, 600 days."
Do you see that?
A Yes.
Q So this study does not -- so most of -- 90 percent of the participants had been treated less than two years?
A Yes. That seems true. But I think they actually only -- oh, no. Yes, that's correct.
Q So this study can -- can this study tell us about the long-term effects of gender-affirming hormones?
MR. STRANGIO: Object to form.
A It depends on your definition of long-term.
Q What is the maximum length of insight we get from this study?
MR. STRANGIO: Object to form.
A They report on the sample as a whole, so I would go with the median of 349 days.
Q So turn to page 308, please.
A Okay.
Q So at the top, in the right-hand column, it says, Co-founding -- or Confounding variables of the

study may include level of familial support, whether a participant is actively receiving psychotherapy, or differences in the specifics of gender-affirming medications (e.g., dosage).
Do you see that?
A Yes.
Q What is a confounding variable?
A It's a variable that's associated with both the exposure and the outcome.
Q Is that something that can be a possible alternative explanation for the improvement?
MR. STRANGIO: Object to form.
A Confounding variables, yes, could be reasons other than the exposure you're looking at that explain the difference in before and after.
Q Further down in that column, the authors note, "However, it should be noted at the baseline a relatively high level of parental support was required among all participants."
Do you see that?
A Yes.
Q Then two sentences down, they say, "Consequently, these findings may not be generalizable to transgender youth with unsupportive parents."
Do you see that?

MR. STRANGIO: I have a --
A Sorry, the Zoom closed for a second.
MR. STRANGIO: So did you hear his answer?
MR. BARTA: Let me ask it again because I'm not sure I heard an answer.
Q It says, also in this same column, you see a sentence that says, "Consequently, these findings may not be generalizable to transgender youth with unsupportive parents."
Do you see that?
A Yes.
Q Moving to page 309, at the top it says, "Additionally, it is also unclear whether the beneficial outcomes associated with GAH take effect immediately after administration of the medication, come about after physical changes begin to manifest, or vary over time."
Do you see that?
A Yes.
Q Why would -- what mechanism would explain beneficial outcomes taking effect immediately after administration of the medication?
A Hopefulness that their gender congruence will improve as the medications take effect.
Q All right. And do you agree this Allen 2019 on its

own can't establish causation?
MR. STRANGIO: Object to form.
A I would not suggest taking any one paper in isolation to conclude causation.
MR. BARTA: I think I'm done with Allen 2019. I'd like to introduce as Exhibit 12 Turban 2022 in the PLOS ONE.
(Deposition Exhibit 12 marked.)
Q Dr. Turban, is this another study you cited in paragraph 15? I should say in paragraph 15, footnote 10.
A Yes.
Q This is your -- you're the Dr. Turban on the byline?
A Yes.
Q Glad to know there's not any other psychiatrists with the name Jack Turban running around out there.
A Not that I know of.
Q So you cite this paper in paragraph 15 to support your statement that "cross-sectional studies comparing those who access gender-affirming hormones during adolescence to those who did not access these interventions have similarly linked access to gender-affirming hormone treatment during adolescence to lower odds of suicidality"; is that

right?

A Sorry, it sounds like I wrote a run-on sentence. Can you say it again?

Q Maybe instead of reading it, you cite this study to support the final sentence of paragraph 15 of your declaration?

A Yes.

Q So this paper also relies on data from the 2015 U.S. Transgender Survey; is that correct?

A Yes.

Q So the data collection limitations we discussed earlier with your other paper also apply to this one?

MR. STRANGIO: Object to form.

A I don't remember specifically what you're referring to.

Q So one of the issues I think we discussed is that -- so this was an online survey; correct?

A This was a survey that -- sorry.

MR. STRANGIO: Object to form.

A This was --

Q It said the underlying USTS data was collected through an online portal?

A Correct.

Q You're not aware of any mechanisms that would

prevent people from filling out the survey multiple times?

MR. STRANGIO: Object to form.

A It says, we discussed before there -- it was a very long survey. So if somebody wanted to take the survey multiple times to try and bias a publication in some way, they would have needed to know how that study was going to be designed before that study was even designed.

So it wouldn't have been possible to intentionally take the survey many times to impact our analysis. But I'm not aware of specific mechanisms that were put in place to prevent someone from doing that. It's a very long survey, so it would be time intensive.

Q And this survey was -- the data was -- people were recruited for the survey through LGBTQ organizations?

MR. STRANGIO: Object to form.

A I don't -- the way it was discussed in the original survey methodology is that they worked with 400 community outreach organizations that would have helped them find potential participants who were transgender.

Q And this study would only include people who

currently identify as -- who would currently identify as transgender at the time of providing the data?

MR. STRANGIO: Object to form.

A At the time of data collection, yes.

Q And -- all right, so in paragraph 15 you say the survey -- the data shows lower odds of suicidality. What -- when you say "suicidality," what do you mean?

A I'm just looking at what specific outcome they (audio interference). We looked at different ones. Past year suicidal ideation.

Q What were the other -- what else did this -- did your article measure?

MR. STRANGIO: Object to form.

A Can you scroll down to the "Methods" section, please. And to the "Outcomes" section, just a little bit lower. Thank you.

So we used the Kessler-6 in the past month, which is a measure of severe psychological distress, binge drinking in the past month, lifetime illicit drug use, excluding marijuana, and measures of suicidality including suicidality during the past year and including suicidal ideation, suicidal ideation with plan, suicide

attempt, and suicide attempt requiring hospitalization.

Q Scrolling down to page 9, Table 2. This table is reporting your results?

A Yes.

Q So I think -- so looking at the table, it looks like you found statistically significant improvement for past year suicidal ideation; correct?

A Which part are you looking at?

Q Past year suicidal ideation.

A There are three different columns.

Q For each of the three different columns on past year suicidal ideation, you found -- or which of the columns did you find statistically significant improvement?

A It looks like the access to gender-affirming hormones between the ages of 14 and 15, a second category between 16 and 17, and a third category of over 18.

THE WITNESS: I have one question to ask Chase about, like, a publishing confidentiality thing. Is it okay if I sidebar with him for a moment?

MR. BARTA: Sure, we can take a break.

MR. STRANGIO: Okay, thanks.

(Recess taken.)
BY MR. BARTA:
Q Still looking at --
A So the reason for the pause was to answer your question most accurately.
So after this paper was published, we found out that the first group that accessed gender-affirming hormones between ages 14 and 15 included some participants who had accessed gender-affirming hormones actually before age 13, which is outside of medical guidelines and led us to think that they were either not clinically relevant or erroneous responses. And so those were removed.
So the paper's going to have a correction that doesn't change the top level conclusions, but I don't want to mislead you by talking about the results on here, some of which may not be correct.
Q Does that -- so which columns would the revision affect on Table 2?
A The first column.
Q Sorry, the first row, first column?
A The first, like, overarching column of "Accessed gender-affirming hormones, ages 14 or 15."
Q Okay. Do you know what the new P-value would be?

A Yeah, I don't remember specifically what changed.
Q So looking at the next row, "Past-year suicidal ideation with plan," did you find statistically significant improvement for any of the categories?
A We didn't detect anything one way or another, so no conclusions can be drawn.
Q The same is true for past-year suicide attempt?
A The same is true.
Q The same is true for past-month binge drinking?
A Yes.
Q And lifetime illicit drug use?
A Sorry, the same is not true for --
Q Oh, I'm sorry.
A I thought you were going to do the past year suicide attempt requiring hospitalization. You're asking past-month's binge drinking?
Q Let me -- past-year attempt requiring inpatient hospitalization, same is true?
A Yes.
Q Okay. And then we move to past-month binge drinking. Which of the -- who showed statistically significant improvement?
A Those who accessed gender-affirming hormones as adults.
Q Okay. The minors did not?

A Correct.
Q And the same is true for lifetime illicit drug use?
A Correct.
Q When we're looking at past-year suicidal ideation for minors, did the study control for mental health?
MR. STRANGIO: Object to form.
Q Let me reask it. Did it control for support from mental health professionals?
A It looks like all of the models were adjusted for whether or not anyone experienced gender identity conversion efforts. So attempts by professionals to force them to be cisgender, but otherwise no.
Q And I see on page 3 in your "Methods" section, you were looking at groups who responded that they wanted gender-affirming hormones; is that right?
A So the control group for most of these analyses was people who desired but did not access gender-affirming hormones because, as we mentioned earlier, not all trans people experience gender dysphoria and would want or need gender-affirming hormones. So we only wanted to look at the population that it would be relevant to.
Q It's possible when someone wants an intervention but doesn't receive it, they experience depression?

MR. STRANGIO: Object to form.
A Certainly if it's a needed medical intervention.
Q What about -- what about non-medically indicated interventions that someone wants?
MR. STRANGIO: Object to form.
A I mean, this is a medically indicated intervention, so a more apt analogy would be if somebody had uncontrolled diabetes and couldn't access their insulin, they would be depressed. I think you're asking if somebody didn't want candy if they would be upset, but I don't think that's an apt analogy.
Q Did you look at -- did this data allow you to determine that everyone who wanted gender-affirming hormones but did not receive them was medically eligible?
A No.
MR. STRANGIO: Object to form.
Q And so turning to page 12 of your study, when we're looking at strengths and limitations, one limitation you report, it says, "Limitations include its non-probability cross-sectional design, which reduces generalizability and limits determination of causality."
Do you see that?
A Yes.

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Q And then the next sentence says, "It is possible that people with better mental health status at the baseline are more likely to be able to access GAH, thus confounding associations between GAH access and adult mental health outcomes measured."
Do you see that?
A Sorry, I got -- it's possible that -- sorry, it's really small on my screen. It's possible that people with better mental health status at baseline are more likely to be able to access GAH thus confounding associations between GAH access and adult mental health outcomes measured. We, therefore, examined lifetime but no past year suicidal ideation as an outcome with results suggesting a lack of reverse causation due to such confounding. Nonetheless this method --
Q Can you translate that sentence into simpler English for me?
A Yeah, sorry, it's a complicated way to look at this.
So we created a new variable that was whether or not you were suicidal in the past, but you're not anymore, right, to try and have -- add a temporal component. Because the big question we're asking here is, is your mental health better now in

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the hormone group because you always had good mental health or did your mental health get better.
So we created this new variable where you used to be suicidal and you're not anymore. And when we looked at those results, it suggested that it was that their mental health improved, not that they had better mental health to begin with. It's not a perfect way to look at it, but it was a way to try and address that question.
Q Can this study by itself establish that access to gender-affirming hormones causes improved mental health?
MR. STRANGIO: Object to form.
A So that additional measure is meant to examine that, but I wouldn't use the study in isolation to draw that conclusion. I would look at the whole body of literature as a whole.
MR. BARTA: I'd like to introduce as Exhibit 13 Green 2022.
(Deposition Exhibit 13 marked.)
Q Dr. Turban, is this another article that you cite in footnote 10 of your declaration?
A Yes.
Q What did this study look at?
A So this one, I believe, was a pure online survey.

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It looks like the overall survey was 34,753 LGBT youth ages 13 to 24, of whom 11,914 were transgender or nonbinary. And they looked at associations between accessing gender-affirming hormones and mental health outcomes.
Q Does the fact they were recruited over the internet through targeted ads limit the study's generalizability?
MR. STRANGIO: Object to form.
A What do you mean by limits it? Like, is it a probability sample or it's not a probability sample?
Q This is a non-probability sample; right?
A Correct.
Q And the data is based on self-reporting by these youth?
A Correct.
Q You say the study, I think, supports that there's lower odds of suicidality with access to gender-affirming hormones; is that right?
A Correct.
Q Does this study control for mental health support?
MR. STRANGIO: Object to form.
A It looked at whether or not adolescents were exposed to gender identity conversion efforts, so

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mental health treatment in which someone tried to force them to identify as cisgender, but it didn't look at other more standard types of mental health treatment, only that type that is considered unethical by the American Psychiatric Association.
Q Did it control for psychiatric medications?
A I don't believe this one did.
Q Does it control for the fact that people with better mental health are more likely to be able to access hormones?
MR. STRANGIO: Object to form.
A Because it's a cross-sectional study, it, yeah, has that question of reverse causation similar to the other cross-sectional studies.
Q So can you infer causation from this study by itself?
MR. STRANGIO: Object to form.
A I would not recommend inferring causation from any one study but would recommend taking the full body of literature as a whole.
Q If we look at page 648 and Table 5. So this is -- this table is reporting results after adjustment; is that right?
A Yes, after adjusting for the variables that are listed below the table: Age, socioeconomic status,

census region, gender identity, sexual orientation, race/ethnicity, parent support through gender identity, gender identity-based victimization, gender identity conversion efforts, and history of puberty blocker use.

Q And it looks like there was -- they found statistically significant improvements for depression and assisted suicide, but not seriously considered suicide in youth ages 13 to 17.

A Correct.

MR. STRANGIO: Object to form.

A I think you misspoke and said assisted suicide. Could you say that again?

Q No. So for ages 13 to 17, it looks like they found statistically significant improvement for depression and attempted suicide but not seriously considered suicide?

A Correct. But I'm not finding -- with it not being statistically significant, that doesn't mean that there's not, it just means they weren't able to tell one way or another.

Q Okay. I think there is one other study that you cite in paragraph 15 of your declaration is Achille 2020, Longitudinal Impact of Gender-Affirming Endocrine Interventions on Mental Health Well-Being

of Transgender Youth; is that right?

A Yes.

Q Can we flip over to Exhibit 8. Can you go to the first page, please. This is the same study -- this is that study?

A The study you were just referencing, yes.

Q And we've looked at -- we discussed this study earlier; right?

A Yes.

Q This is the one where you had 90 percent of participants in counseling; right?

A Right.

Q And there was -- and female to male participants did not show statistically significant improvement for cross-sex hormones; is that right?

MR. STRANGIO: Object to form.

A I think you're referencing Table 4 where trans masculine adolescents, after adjusting or controlling for counseling or psychiatric medications, had better quality of life scores after cross-sex hormones.

Q So I'm looking at Table 4. Where -- can you scroll -- I'm sorry, Chase is going to -- can you scroll down to page 4, Table 4.

A Oh, sorry. This is where they called it a trend

towards significance, but it's one -- the authors imply that it is -- it's a complicated stats thing. I would not consider it to be statistically significant, but they point out that it's a trend towards statistical significance.

Q But you would not consider it statistically significant for any of the participants who were receiving cross-sex hormones?

MR. STRANGIO: Object to form.

A Yeah, I wouldn't use this particular study to argue any -- in either direction. I think it -- just nothing was statistically significant, so it doesn't tell you much about cross-sex hormones, only about pubertal suppression.

MR. BARTA: Okay. I'd like to introduce as Exhibit 14 de Lara 2020.

(Deposition Exhibit 14 marked.)

Q This is a study cited in footnote 7 of your declaration; right?

A Yes.

Q What did this study examine?

A This was a longitudinal cohort study that looked at mental health before and after one year of gender-affirming hormones from a clinic in Spain.

Q And looking at page 43 of the study, it looks like

in the study design they looked at 23 trans patients; is that right?

A Yes, that looks correct.

Q And these patients came from the pediatric endocrinology clinic of Hospital Clinico San Carlos?

A Yes.

Q So this would be a non-probabilistic sample?

MR. STRANGIO: Object to form.

A Yes.

Q So I see they compared them to what they called 30 cisgender controls.

Do you see that?

A Yes.

Q Would the cisgender controls be eligible for gender-affirming hormones?

MR. STRANGIO: Object to form.

A Likely, no, unless they had hypogonadism or some other extenuating circumstance.

Q So this study is not comparing -- this study is not comparing the administration of gender-affirming hormones versus withholding them for transgender youth?

MR. STRANGIO: Object to form.

A Correct. It's an uncontrolled longitudinal cohort

study.
Q And then on -- also on page 43, looking under statistical analysis, it looks like they measured changes after one year of treatment; is that right?
A Yes.
Q So flipping over to page 46.
MR. BARTA: Scroll down further, please.
Q So the -- at the -- near the bottom of the page, it says, "In our sample, the families of transgender participants provided a highly supportive environment, as demonstrated by the family APGAR scores. This could explain the highly favourable outcomes observed at 1 year of treatment with CSHT."
Do you see that?
A Yes.
Q Is this saying that family support could be a possible alternative explanation for the outcomes?
MR. STRANGIO: Object to form.
A I guess so, but presumably they had supportive families when they entered the treatment also. So I wouldn't expect that necessarily family support changed substantially from time point zero to time point 1 if they were always supportive families. But over that time point that they were on

gender-affirming hormones, their depression scores dropped dramatically in a statistically significant way.
Q Can the results of this study be generalized to transgender youth without supportive families?
MR. STRANGIO: Object to form.
A Likely, no, because they'd be very unlikely to access gender-affirming hormones given that legal guardian consent is required for all of the clinics I'm aware of.
Q Can this study tell us anything about the effects of gender-affirming hormones after one year of treatment?
A No.
Q Would you rely on this -- do you think this study by itself establishes that gender-affirming hormones cause improved mental health?
MR. STRANGIO: Object to form.
A I think the improvement in depression scores is impressive, but I wouldn't use any one study in isolation to make a causal inference. I would use the full body of literature available.
Q So looking -- taking a step back and looking at the full body of literature, how many of the studies do you cite, do you need to draw a causal inference?

A I think these are the same questions as before.
Q Different topic, though. For cross-sex hormones, which of these studies -- at what point in the development of the literature do you think causation was established?
MR. STRANGIO: Object to form.
A Again, it would be the same as my answer for pubertal suppression.
Q What was that answer?
A That each study provide -- has different strengths and limitations. Some of them, for instance, establish that adolescents have better mental health after treatment than before treatment. That alone raises the question of would their mental health have improved anyway. Or is the control group, the cross-sectional studies, compare people who accessed hormones to people who desired them but didn't access hormones and provide additional information.
All -- all of these studies, everything in medicine, is going to have statistical analyses, and these statistical analyses never tell you with a hundred percent certainty that something is causal, but every time there's more data that accumulates, it increases your level of certainty.

Q Okay. So I think it looks like the -- chronologically, the first study you cite is Allen 2019; right?
MR. STRANGIO: Object to form.
A Sorry, remind me which footnote this is.
Q I think we're looking at footnote 7 through 10.
A Which one are you --
Q Allen 2019.
A No. I mean, also, so all of these say, for example, and they're listing example studies. But, for instance, the other study we discussed, de Vries 2014, also was looking at patients after gender-affirming hormones.
Q So at what year in the development of the literature do you think you can say causation was likely established?
MR. STRANGIO: Object to form.
A Yeah. Again, as I said, this is all about statistics and increasing certainty. You can never say in anywhere in medicine that something is -- you've established it a hundred percent. You're always getting more and more research. I think it was really important to have studies with control groups to supplement the, for instance, reverse causation question of some of these other studies.

I think it was really useful that we started seeing data from more and more countries and more and more clinics. It was really useful that in the New England Journal article that they found that appearance congruence and improved mental health tracked in the same direction. All of these things keep increasing your certainty. There's no cutoff number of studies the way you're asking.

Q Do you -- so if I understand you correctly, you think causation has likely been established?

MR. STRANGIO: Object to form.

A I think there's convincing evidence of causation.

Q So you think it goes -- the literature -- the body of literature shows it goes beyond association?

MR. STRANGIO: Object to form.

A I think there's convincing evidence of causation.

Q So you mentioned the 2014 de Vries study again. Was causation established in 2014?

MR. STRANGIO: Object to form.

Q Let me rephrase that.

Do you think there was convincing evidence of causation in 2014?

A I think the de Vries study alone is weak evidence for causation.

Q So the next study chronologically you cite is Allen

2019. Do you think there was convincing evidence of causation in 2019?

MR. STRANGIO: Object to form.

A I think if you're just looking at those two studies, there wasn't -- the additional study that I think was really useful of having a control group of people who didn't access care, but you also have to keep in mind that all of this was happening in the context of clinicians around the world having clinical experience working with these patients and also seeing the improvements.

So I would caution someone against saying, oh, in -- it wasn't until 2019 or whatever year that we had a control group that we shouldn't have been doing this when there were patients who were struggling who needed treatment and doctors treating them and them doing well and having a long history of experience in many adult patients who didn't access this and did quite poorly.

Q So which of the studies cited in your declaration do you think moved the line from saying this is -- could be causal to there is convincing evidence of causation?

MR. STRANGIO: Object to form.

A Yeah, as I said, I don't think I can answer that

question.

Q So in 2019, would you have had sufficient evidence to say there is -- causation has likely been established?

MR. STRANGIO: Object to form, asked and answered.

MR. BARTA: I don't think I got an answer. You can say yes or no.

A I think I answered the question.

Q Do you think there was convincing evidence of causation in 2019?

MR. STRANGIO: Object to form.

A If you're looking at the de Vries study and the Allen study alone, those are weak evidence for causation.

Q What about in 2020, do you think there was convincing evidence of causation in 2020?

MR. STRANGIO: Object to form.

A Again, also without having all of the studies in front of me and just having these example studies, it's hard for me to give you a specific timeline of every study that has come out. These are illustrative example studies.

MR. BARTA: Why don't we take a break here. Five minutes okay?

MR. STRANGIO: That's great. Thank you.

(Recess taken.)

BY MR. BARTA:

Q Looking at paragraph 16 of your declaration, Dr. Turban, you say, "Peer reviewed" -- well, actually, before we get there.

So you talk about gender-affirming surgeries in paragraph 16; right?

A Yes.

Q What are the types of gender-affirming surgeries?

MR. STRANGIO: Object to form.

A There are more than I could easily list. But, for example, there's gender-affirming masculinizing chest surgery. The other surgeries generally aren't considered for minors, but there's -- but include vaginoplasty, phalloplasty, among others.

Q Why are vaginoplasty and, I'm sorry, the phalloplasty not generally considered for minors?

A They're fairly big invasive surgeries that carry substantial medical involvement and are difficult to reverse.

Q What does a vaginoplasty involve?

A It's an involved procedure to go through all the steps, but generally creating a vaginal canal and a vulva.

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Q How is that done?
A You want me to walk you through it?
Q Sure.
A Through it step by step, surgical technique?
Q Maybe I should start with, do you know how --
A I'm not a surgeon. It would be better to ask a surgeon, but I have a general understanding of how they're done.
Q What's your general understanding?
A So at a high level, skin is taken from the perineal area, and the surgeon creates a space between the rectum and the bladder, essentially, and then lines that canal with skin and then creates a vulva around that canal. They also need to reposition the urethra where urine flows through and move the erectile tissue to create a clitoris.

There are also different types of vaginoplasties, so if you really want the details on all the different surgical variations, you would need to talk to a surgeon.

Q And what is your general understanding of what a phalloplasty involves?
A There are also different types of phalloplasties, but most of them involve taking a piece of tissue from somewhere else in the body and fashioning a

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phallus from that, and then positioning it in an anatomically typical area. You also have to reposition the urethra and extend it.
Q And what does gender-affirming chest surgery involve?
A Again, there are different techniques. The least invasive type for people who have a small amount of chest tissue just involves essentially liposuction of that small amount of tissue with a small incision. The more common surgery, because it's rare that someone that early in the stage of development would have surgery, is a double incision approach where they make two incisions and remove the breast tissue. It's similar to the surgery that cisgender women might have with a male contour. Then it generally also involves resizing the nipple so that it has a more masculine appearance.
Q What is the average -- do you know what the average age is for receiving gender-affirming chest surgery?

MR. STRANGIO: Object to form.

MR. BARTA: Sorry, Chase, I think we've lost your connection.

(Discussion held off the record.)

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Q So I see in footnote 11 of your declaration, you say, "All surgical" -- or "Of note, all surgical interventions in pediatrics, for example, gender dysphoria or otherwise are approached with substantial caution given the risk inherent with any type of surgery." Chest affirming -- "Gender-affirming chest surgery is only considered for adolescents with gender dysphoria when an interdisciplinary team, including medical providers, surgical providers, mental health providers, adolescents, and their legal guardians are in agreement that the benefits of such an intervention would outweigh the risk."

Is that correct?

A Yes.
Q When weighing risks and benefits, are the considerations different for chest surgery from genital surgery?

MR. STRANGIO: Object to form.

A There are different risks for chest surgery than genital surgery, so yes.
Q What are the differences in risk?
A Again, you should talk to a surgeon for the details, but generally chest surgery is less invasive.

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Q If someone had -- if a transgender person has pubertal suppression, gender-affirming hormones, and gender-affirming surgeries, is that a result of them having all the characteristics of the opposite sex?

MR. STRANGIO: Object to form.

A No.
Q What would they not have?

MR. STRANGIO: Object to form.

A Again, the idea of opposite sex is a somewhat arbitrary distinction. But if you mean, for instance, like would their chromosomal makeup change, no.
Q Would it give them the reproductive capacity of the opposite sex?

MR. STRANGIO: Object to form.

A Again, what do you mean by "opposite sex"? Like would a trans masculine person --
Q Would a trans masculine person --
A (Audio interference.)
Q Would they what?

MR. STRANGIO: Sorry, let me try -- I'm going to take this off and go on our Wi-fi.

(Discussion held off the record.)

BY MR. BARTA:

Q Does receiving -- if a transgender person receives pubertal suppression, gender-affirming hormones, and gender-affirming surgeries, does that resolve all symptoms of gender dysphoria?

MR. STRANGIO: Object to form.

A One of the criteria is having a gender identity that's different than what's recorded on one's birth certificate, so that criterion would not change unless the birth certificate were updated. But generally when people say sex assigned at birth, they mean what their birth certificate said when they were born.

Q Would having all of those interventions resolve the distress that accompanies gender dysphoria?

MR. STRANGIO: Object to form.

A It depends on the person. So it was interesting that in that de Vries study those were people with gender dysphoria who got puberty blocker, gender-affirming hormones, and gender-affirming surgery, they probably had very supportive families because these were families that were willing to take them to a clinic for help.

They also live in a country where there's less trans phobia than others. So impressively, by the

end of that study, those people did have general mental health on par with the general population of people who didn't experience gender dysphoria.

That being said, it's not -- it doesn't fix everything, as our patients are routinely educated about and generally know from common sense that, you know, it can improve their physical symptoms of gender dysphoria, which is what these interventions are designed to do, but it can't get rid of the impact of being harassed or being trans, being discriminated against.

The impact of legislation that implies that they are being singled out from other people, all those things are still going to negatively impact their mental health, even after these interventions. Their mental health may be better than if they didn't receive interventions, but those things can still have an impact.

Q Do many people who have received the interventions still require mental health support?

MR. STRANGIO: Object to form.

A Again, it depends on the population you're talking about. But generally, certainly, many of my patients do because of those other factors that I have described.

Q In paragraph 16 of your declaration -- I'll give you a moment to turn there.

A I have it.

Q You say, "Peer-reviewed research has shown improvements in mental health following gender-affirming chest surgery for trans masculine" adults "with gender dysphoria where medically indicated."

Do you see that?

A It says adolescents.

Q Adolescents. Thank you for the correction.

So when you say "shown improvements," do you think the evidence shows that gender-affirming chest surgery causes improvements in mental health?

MR. STRANGIO: Object to form.

A So for gender-affirming chest surgery for trans masculine adolescents, the research -- there's not as much research as there is for pubertal suppression and gender-affirming hormones. There are the studies that I list, including one by Olson-Kennedy, et al., where they compared people who got surgery with those who didn't, and those who got surgery had lower scores on a measure of chest dysphoria.

And then the Mehringer, et al., study there

did qualitative interviews with patients who had that surgery, and they discussed how it had a positive impact on their mental health. But we don't have the number of studies that we have for pubertal suppression and gender-affirming hormones where you would be able to make causal inferences based on that data.

A lot of it is, you know, based on clinical experience as well and individual patients and knowing the risks and benefits of treatment, and that's why top surgery is certainly not as commonly done for adolescents compared to those other interventions.

Q Is it -- am I understanding you correctly that you're saying you cannot make causal inferences regarding gender-affirming chest surgery?

MR. STRANGIO: Object to form.

A I'm not an expert in the adult literature, so I wouldn't venture to summarize the literature there. But the literature in adolescents is at the level of more case series qualitative data that doesn't make a strong causal inference.

Q Does the literature for adolescents allow you to draw any causal inference?

MR. STRANGIO: Object to form.

A We have the two studies that are listed there that those who receive top surgery had better mental health outcomes as far as chest dysphoria compared to those who did not, and the qualitative study that patients who underwent that surgery felt it was very helpful for their mental health, but there's no data beyond that in adolescent literature, that I'm aware of, to show causal effect.

Q And are you aware of any adolescent literature regarding vaginoplasties?

MR. STRANGIO: Object to form.

A I'm not familiar with them. I have heard that there have been cases where, say, a 17-year-old has had a vaginoplasty with the full support of their medical and mental health team and family because they wanted to have their surgical recovery prior to going to college. I've seen maybe scattered media reports of those sorts of things. But I'm not aware of peer reviewed research.

Q Are you aware of peer reviewed research on adolescents for phalloplasties?

MR. STRANGIO: Object to form.

A No.

MR. BARTA: I'd like to introduce as

Exhibit 15 Olson-Kennedy 2018.

(Deposition Exhibit 15 marked.)

Q Is this one of the studies that you cite, Dr. Turban, in paragraph 16?

A Yes.

Q And what did this look at?

A Sorry, we're trying to see if we can find a hard copy.

MR. STRANGIO: I don't think so.

A No.

So this study looked at -- if we can scroll down. So 68 -- I believe it was adolescents and young adults, so between 13 and 25, 68 of whom had masculinizing top surgery and 68 of whom did not.

Q So let's turn to page 433, under "Study Recruitment and Data Collection," it looks like the youth were recruited from a gender clinic; is that right?

A Yes. I believe they're from Children's Hospital Los Angeles.

Q So this would be another non-probabilistic study?

A Yes.

Q And at the bottom of that paragraph it looks like they only obtained data from 72 percent of post surgical participants; is that right?

A Yes, I think there's another section of this paper

where they go into detail about how they went through extensive efforts to call people at multiple numbers and that they were able to connect with 72 percent.

Q And then later in this paragraph -- and we don't know -- so for the 18 percent that didn't respond -- or sorry, for the 28 percent that didn't respond, we don't know why?

MR. STRANGIO: Object to form.

A Yeah, I'm trying to look. There's an area where they go into detail.

Q Okay. Well, I can look at that, then, if you ...

And then it looks like further down, there was -- in the study recruitment, it looks like they had the participants fill out a ten-minute survey; is that right?

A Yes.

Q And it looks like the survey measured demographic information, characteristics of surgery in chest dysphoria; is that right?

A Yes.

Q The study didn't separately measure mental health or suicidality?

A Not outside of the chest dysphoria measure.

Q And this would be self-reported data?

A Yes. We might want to look at the demographic data because I don't know what all was in there.

Q Let's flip over to page 434, page 2. In Table 2, in the -- it looks like the average -- the average age at the time of surgery was 18.9 years; is that right?

A I'm not sure. I think that's the age at the time of survey.

Q So maybe flip back a page to 433 at the bottom. It says, on the bottom right, "The mean (SD) age at chest surgery in this cohort was 17.5 (2.4) years (range, 13 to 24 years), with 33 (49 percent) being younger than 18 years."

So if I'm reading this correctly, does this -- is this saying that the average age at chest surgery was 17 -- average age was 17 and a half?

A Yes.

Q And 49 percent were younger than 18?

A Yes.

Q So 51 percent would have been older than 18?

A Yes.

Q Does this -- do you know, does this study report data separately for minors versus adults?

A I wish I had the full paper in front of me. I'd have to look at that section.

Q Okay. We can scroll down to -- maybe go to page 434. It's the bottom.
Is this the section you would need to look at?
A So what they did, if you look on the right-hand side. So mean chest dysphoria scores among post surgical participants was 3.3 and were not significantly associated with length of time between surgery and survey, complication rates, or age group, i.e., minors versus those 18 or older.
So basically what that's saying is that the overall sample chest dysphoria difference would represent the under 18-year-olds also.
Q Do you know how they measured chest dysphoria?
MR. STRANGIO: Object to form.
A They used a specific novel chest dysphoria scale.
Q Can you flip over to page 435. Scroll down, please. So the -- it says towards the bottom, "Finally, the Chest Dysphoria Scale is not yet validated, and may not represent distress or correlate with validated measures of quality of life, depression, anxiety, or functioning."
What does that mean?
A That means what I was saying, that it's a novel chest dysphoria scale. It's a new scale that they developed to be able to look at chest dysphoria

before and after surgery.
I think if you go maybe to the "Methods" section, they may have published elsewhere how they actually developed the scale, but I don't remember the details of it.
Q But we don't know if this scale correlates with improved mental health generally?
MR. STRANGIO: Object to form.
A To my knowledge, it has not been studied to see if it tracks along with anxiety, depression, et cetera.
Q Okay. Can we look at Table 2 on page 434. So in Table 2, it lists the time since surgery.
Do you see that?
A Yes.
Q So it looks like all but ten participants had had surgery in the last two years; is that right?
A Yes.
Q And then the longest participant was five years; right?
A Yes.
Q So this study can't tell us anything about impacts on chest dysphoria after five years?
A Correct. You would probably need to look at the adult literature and infer from there.

MR. BARTA: I'd like to introduce as Exhibit 16 Mehringer 2021.
(Deposition Exhibit 16 marked.)
Q Is this the other study that you cite in paragraph 16?
A Yes.
Q I believe you called it a qualitative study; right?
A Yes.
Q What is a qualitative study?
A A qualitative study is when you use text-based data and analyze things based on the meaning of the text. Often, but not always, it's based on interviews with people who have had specific experiences so that you can draw out specific things from those experiences to better understand them.
Q What are some of the risks you're concerned about when you're conducting a qualitative study?
A One thing is you want to see if you reach thematic saturation. So generally you keep doing interviews until you stop hearing new things or new themes. Usually you want to have more than one person coding the data. Sometimes you'll calculate something called a Kappa that is showing the degree to which the two coders are aligning and what

themes they think apply to different areas of text.
Q Did this qualitative study control for potential confounding variables?
MR. STRANGIO: Object to form.
A That's not generally something one would do with a qualitative study because you're analyzing text and themes. So there's not usually a mathematical way to adjust for confounders because it's not really the type of data that you're looking at. You're looking at words, themes.
Q So looking at page 2 of the study. Continue scrolling, please. So under "Methods," it looks -- it says, "The study participants were recruited from a large U.S. pediatric hospital based gender clinic."
Do you see that?
A Yes.
Q So this would be another non-probabilistic sample?
A Yes.
Q And then on page 3, continue down, the results. So it says, Of the 35 youth for recruitment, 30 youth enrolled and completed the study visit: 16 had had MCS (non-MCS) and 14 had undergone MCS (post-MCS).
Do you see that?
A Yes. I think you reversed it a bit, but --

Q Sorry, I'm getting tired.
So there were 30 participants in the study?
A Yes.
Q 16 had not undergone chest surgery, 14 had; is that correct?
A Correct.
Q Is this a small pool of participants for a qualitative study?
MR. STRANGIO: Object to form.
A So qualitative studies usually don't -- the number doesn't necessarily tell you if you did enough interviews. It's usually based on if you've met saturation. So we'd have to look through here for where they describe if they reached thematic saturation, which is when you are not identifying new themes as you interview new participants.
Q And if we scroll up on this page to Table 1, it's reporting some of the data on this, and it says -- there's a column that says, "Time since MCS, months."
Do you see that?
A Yes.
Q So it looks like this study only looked at people who had had, on average, surgery 19 months earlier?
A Correct.

Q So it doesn't tell us -- and it looks like the longest person who participated had had it 48 months earlier?
A Correct.
Q So this can't -- can this tell us anything about the impact of chest surgery after 48 months?
A No.
MR. BARTA: And I'm done with this. I think -- I'd like to bring up as Exhibit 17, Tang 2022.
(Deposition Exhibit 17 marked.)
Q Is this -- this is another publication you cite in paragraph 16, note 13 of your declaration.
A Yes.
Q What did this study look at?
A So if you could scroll down to the abstract, please. So it was looking at adolescents who had gender-affirming masculinizing top surgery, and it was looking at several things, including complication rates and how many experienced regret.
Q And I think you described this in your declaration as finding a low -- extremely low rate of regret; is that right?
A Yes. It was .95 percent.
Q Moving to page 3 of the study. So under "Methods," it says, "We conducted a retrospective cohort study of adolescents who underwent gender-affirming mastectomy within Kaiser Permanente Northern California, a large integrated healthcare system"; correct?

A Mastectomy, but yes.
Q Thank you.
So this would be another non-probabilistic sample?
A Yes.
Q And flipping over to page 4. This discusses how it measures regret, and it says, "For the entire cohort of 209 patients, manual chart review was performed to search for" --
A Sorry, I lost where you are exactly.
Q So in the -- near the bottom of the page, do you see the sentence that says, "For the entire cohort of 209 patients, manual chart review was performed to search for satisfaction versus regret/dissatisfaction within both post-operative surgical and mental health provider records"?
A Yes.
Q Was this -- so data was collected by examining providers' notes; is that right?
A Yeah, this one is -- when we were talking about

retrospective studies before, this one really is a true retrospective study that they're looking back at data that had been collected in the past.
Q Okay. So this would not capture regret that was not reported to providers?
MR. STRANGIO: Object to form.
A Correct.
Q It also would not capture people who moved to a different healthcare system; right?
MR. STRANGIO: Object to form.
A We would have to go through the methods, but they probably --
Q Why don't we flip over to page 8, then. So under the last paragraph there, it was discussing limitations here. So the first one they mention is "First, its retrospective design meant we were unable to measure patient satisfaction and quality-of-life outcomes."
Do you see that?
A Yes.
Q So they were not measuring quality of life in this study?
A No. I believe they were just looking at regret and complications.
Q So this wouldn't tell us if anxiety was reduced?

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A No. The study didn't ask that question.
Q Or depression was reduced?
A It did not ask that question either.
Q Or suicidality?
A It did not ask that either.
Q The next sentence says, Complications and any mention of regret were obtained from provider notes, which may be variable, and thus may be under-reported.
Do you see that?
A Yes.
Q Is that saying that providers may not have reported every instance of regret?
MR. STRANGIO: Object to form.
A I don't believe that's what they're saying. I think they're saying that it's possible that not all patients who experience regret may have told their therapist or their physician, so they may not have reported it.
Q And then the next sentence says, "In addition, although an integrated healthcare system allows for continuity of care, some members may have transferred care or changed their insurance status and thus subsequent complications of reversal operations would not be captured."

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Do you see that?
A Yeah. My question there is if they presumably -- I'd have to go back and look at their methods, but they would have stopped their follow-up period at the time when the -- they didn't have any more records for the patient. So that, I assume, that would be reflected in the follow-up period.
Q But you don't know looking at this?
A I can only see this one part of the paper, but I would need the full paper to answer that question.
Q Okay. So looking at page -- why don't we flip over to page 6. Oh, sorry, page 5. So in the second paragraph there, second sentence, it says, "Patients had a median post-operative follow-up length of 2.1 years."
Do you see that?
A Yeah, that's what I was saying. We'd have to look at the methods, but I'm wondering if they -- if that reflects the fact that if someone had left to another healthcare system that they wouldn't have any more notes. So the follow-up period would only be the period that they have notes for, which would be reflected in this median follow-up.
Q So can this tell us anything about the long-term impact of regret -- or the long-term incidence of regret?
MR. STRANGIO: Object to form.
A The term "long-term" is subjective. I don't know what you mean specifically.
Q Would you rely on this study to determine whether -- to determine incidence of regret after 2.1 years?
A The study, I would say 2.1 years. I'm not sure if it's this study or another study, but they looked at if regret was more likely less than one year versus up to however many years they looked at, and it wasn't different. But you'd have to piece a few different studies together to answer that question. But this study alone only looks at a mean of two years -- or a median of two years.
Q Are you aware of literature that examines the median time of regret for adolescents who went -- underwent gender-affirming chest surgery?
MR. STRANGIO: Object to form.
A No. I think that would be difficult to conduct since it's a relatively infrequent outcome.
Q All right. So I did want to -- oh, before we move on to the next section of your declaration, I did want to go back to paragraph 11 of your declaration.

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A Yes.
Q At the beginning of paragraph 11, you said, "I cite relevant literature to support my opinions that gender-affirming medical interventions improve mental health for adolescents with gender dysphoria when medically indicated."
A Yes.
Q Did you -- did you cite all relevant literature?
MR. STRANGIO: Object to form.
A I'm not sure. I don't believe -- I didn't aim to include every single study looking at the impact of gender-affirming medical interventions on mental health. These were more meant to give examples of the types of literature, so I can't tell you definitively. I'd have to look at my other reference documents to know if I included every single one.
Q How did you decide what literature was relevant to include?
A For which part?
Q Did you use a different -- did you use a different criteria of relevance for different parts?
A The different parts reference different questions, so yes. Is there a specific one that you're --
Q So what -- so for pubertal suppression, how did you

decide what was relevant to include there?

MR. STRANGIO: Object to the form.

A Sorry, I'm finding which paragraph was pubertal suppression.

Q Paragraph 14.

A So I wanted to highlight that there were cross-sectional and longitudinal studies because I think knowing that there are those two types of studies is important because they complement each other in their different strengths and limitations. And then the examples I gave are some of the most frequently cited ones in the field.

Q So for paragraph 15, when you talk about gender-affirming hormones, how did you decide what literature was relevant?

A Again, I wanted to emphasize that there were both cross-sectional and longitudinal studies and included the ones that are most frequently cited.

Q And for paragraph 16 where you talked about surgical intervention, how did you decide what was relevant?

A These are the only two studies that I'm aware of that look at mental health following masculinizing top surgery for adolescents. Oh, sorry, for the mental health outcomes and then the regret rate, if

you -- I don't know if you consider that a mental health outcome or something different.

Q All right. So turning to --

MR. BARTA: You can take the exhibit down, thank you.

Q So in -- turning to paragraph 18 of your declaration.

A Yes.

Q You say it's not correct that -- to regard, quote, gender-affirming medical care as experimental in nature.

What do you mean by "experimental"?

A So experimental is not a term that's really used frequently in medicine, but I think its closest analogy would be investigational as in a medication that is not FDA approved for use in treating medical conditions.

I think I later explain that what it is is off-label prescribing, which is using an FDA-approved medication, so we know that it's safe for use in humans, and using it for a different condition where there is published research showing that it's safe and effective in these other conditions.

And also when prescribing, as I put in this

quote from the American Academy of Pediatrics, is particularly common in pediatrics, and they emphasize that it's not, per their words, improper, illegal, contraindicated, investigational, nor is it experimentation.

Q Since you say experimental is not a term that medical professionals generally use, what terms do they use to describe a treatment with -- where there's so -- where the literature on risk and benefits is still developing?

A That's true of all medical interventions.

Q Are there -- is there a different strength of literature for different medical interventions; right?

MR. STRANGIO: Object to form.

A There are many different ways that people will categorize different medications based on how they've been reviewed or what research is available. Again, some of the ways are investigational, which would imply that it has not been reviewed by the FDA for use in humans. Off label is another common use, which means the FDA has approved this medication for another condition but hasn't evaluated the literature for that specific condition.

The reason that's particularly common in pediatrics, and really medicine as a whole, is that the incentive structures for pharmaceutical companies are such that they're incentivized to get their first FDA indication. They invest millions and millions of dollars in large studies, and a lot of administrative work and paperwork with the FDA to get the FDA to approve a medication.

Then once it's on the market, there's not a lot of incentive for that pharmaceutical company to pay a lot of money to that -- for all the studies and all the paperwork the FDA requires to get a second indication.

And usually what happens is kind of that work of figuring out if that medication is useful for other conditions goes to academic medical centers, which is all the research that we've looked at for gender-affirming care. That the NIH has funded this, a lot of different academic medical centers have invested their time and money in researching these questions to help patients with gender dysphoria, and they've been the ones generating the research.

But academic medical centers would never have the money to go through all the administrative work

and to get into a new FDA indication. So often what doctors are doing is looking at the medical literature, see what applies to their patients to see if there's an off-label use that might be appropriate.

And off-label use often becomes a medical guideline because there may be a lot of research that is done showing a medication is useful for a condition, even though the FDA hasn't reviewed it because FDA -- the FDA reviewing it involves a pharmaceutical company paying a lot of money to go through that process.

Q If a treatment is investigational, can that have impacts on insurance coverage?

MR. STRANGIO: Object to form.

A Generally when I think of investigational, I think of a drug that has not been FDA approved, so you wouldn't be using it on patients so it wouldn't be covered by insurance.

Q What about you say, you know, it's -- some people say, you know, gender-affirming medical care is experimental. If it was classified as experimental, would that impact insurance coverages?

MR. STRANGIO: Object to form.

A That's not a -- that's not a classification that would be used. Are you asking if off label would impact insurance coverage?

Q No. Maybe just -- maybe we'll just go to a different topic. I'm not sure if I'm asking very good questions.

So we've looked at a lot of research on sort of the -- on what you think the psychological benefits of gender-affirming medical care. What area -- are there any areas where you think further research is needed?

MR. STRANGIO: Object to form.

A For -- sorry, in what respect?

Q What about for gender-affirming hormones, are there any areas where you think further research is needed?

MR. STRANGIO: Object to form.

A That's such a broad question. Do you mean like for -- to reach some bar or because it would be interesting?

Q I'm just asking if for impact of gender-affirming hormones on mental health, is there any area where you think further research is needed?

MR. STRANGIO: Object to form.

A It's such a broad question that I -- I mean, I

could think of nearly infinite questions for anything in psychiatry that would be interesting additional data ranging from different formulations would be better tolerated or resolving different mental health outcomes. We always want to know how we can improve care.

Q What do you think the most pressing open questions are -- what do you think -- are there -- sorry, let me rephrase that.

For gender-affirming hormones, what do you think the questions are that most urgently need research?

MR. STRANGIO: Object to form.

A I think the biggest question right now is that so few patients are able to access this care, and that's going to get worse in a lot of states as this legislation is being introduced. And so really, I think what a lot of my colleagues are most interested in is what are going to be the adverse mental health consequences of these laws and how can that be mitigated for these patients who aren't going to be able to receive what are the standard medical treatments. To be honest, that's what a lot of people have been focused on over the past year or so.

Q Do you think there is no room for reasonable disagreement about the benefits of gender-affirming hormones?

MR. STRANGIO: Object to form.

A What do you mean by "reasonable disagreement"?

Q Do you think reasonable professionals in your -- in psychiatry could come to a different conclusion than you about the benefits of gender-affirming hormones?

MR. STRANGIO: Object to form.

A I think people could have different opinions on, say, how the care is administered or the details, you know, about what dosing forms are the best or, like, if there are specific ways one should -- because I described earlier there's such a diversity of patients that the way -- the type of mental health evaluation you're doing is very different for different patients.

So I think people are really interested in figuring out if there's a way that could be -- that there's -- you know, there's a question of -- right now we do a lot of mental health assessment, and when you do that, you're leaving patients without care for the length of time that you're doing that assessment. So there's argument to be made that

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the leaner you can make the assessments could be good because patients aren't going to have untreated gender dysphoria for as long.

On the other side of the spectrum, people are wondering, well, maybe it's important to keep them long because if they're shorter, then that could result in more people not having full, adequate information about the care or that we haven't repeated it enough times, maybe they need to hear it from a mental health professional. And the medical professional, and then other people, would point out that there aren't really other medical interventions or psychiatric interventions where we make people go through really, really long health assessments before they can access the care.

So certainly there's discussion within our field about that. But I would say there's not reasonable discussion within mainstream psychiatry that this care should be banned. I think the discussions are more around the details of tailoring the care and how specifically it should be administered.

But I don't think you're going to find reasonable mainstream psychiatrists who would agree that this care should just not be available for

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patients or who want to recognize that you need to be able on a case-by-case basis to make a determination on whether or not thinking a patient might need this and that. There are going to be patients who do.

Q So do you think a reasonable psychiatrist could conclude that the risks outweigh the benefits for gender-affirming hormones?

MR. STRANGIO: Object to form.

A I think for an individual patient you might certainly conclude that. I would conclude that for some patients, right. You could have a patient who has a really serious clotting disorder or they're acutely suicidal and they need acute mental health stabilization before they'd be able to go through the process of getting blood draws and having a pubertal stage evaluation by an endocrinologist and going through all the things that treatment require.

So certainly I don't think you're going to find a psychiatrist who would say there aren't individual cases where you wouldn't consider this treatment. But I will tell you there are cases where it's needed and cases where it's not.

Q What about generally?

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A I don't understand the question.

Q Do you think a reasonable psychiatrist could look at the literature and say, as a general matter, I think the risk of gender-affirming hormones outweigh the benefits for most patients?

MR. STRANGIO: Object to form.

A For most patients? No.

Q Would you be able to sit --

A So most patients, where it's medically indicated, under current guidelines, no.

MR. BARTA: I'm going to move to some different material. But do we need to take a break now or are we okay to continue?

THE WITNESS: Can I just grab some water?

MR. BARTA: Five minutes?

MR. STRANGIO: That would be good.

(Recess taken.)

MR. BARTA: I would like to introduce as Exhibit 18 the Ludvigsson 2023. No, it's not that one. Shawn, I think it would be the next document, not that one. There you go. Thank you.

(Deposition Exhibit 18 marked.)

BY MR. BARTA:

Q Dr. Turban, this is an article titled "A systematic review of hormone treatment for children with

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gender dysphoria and recommendations for research."

Are you familiar with this article?

A I saw that it was published. The methodology requires you to go to a lot of their source documents that are very, very long to understand their methodology, so I haven't been able to adequately evaluate it.

Q So this is -- this is from researcher -- this is a study out of Sweden; is that right?

A This is the one that was just published very recently; right?

Q Correct.

A Yes.

Q And it's a -- they call it a systematic review. What is a systematic review?

A Systematic review is -- there are different types of review articles in which you summarize the literature. A narrative review is written by an expert who is respected in the field, knows literature well, and summarizes it for other experts. A systematic review is a specific type of review where you search -- research databases with a predefined methodology.

So you say, I'm going to use these search terms and these databases, and I'm going to see all

the articles that come out. And then I'm going to have criteria to decide which ones I'm going to include and which ones I'm not going to include, and then you summarize the final set of studies that you have.

Q So I want to flip to page 4 of this.

MR. BARTA: Shawn, can we go to page 4.

Q So do you see "3.3, Psychosocial and mental health"?

A Yes.

Q So the first sentence says, "Table 2 outlines the six studies that examined psychosocial outcomes and cognitive effects."

Do you see that?

A This is the sentence that made me want to evaluate their underlying source documents in detail because, as you see, we've discussed clearly more than six. So it seems clear that this review has excluded many studies, but it's not clear to me which ones they excluded and specifically why.

Q Can we flip to page 13. So do you see Notes 14 and 15?

A The second page of citations?

Q Correct.

A Yes.

Q So Note 14 cites de Vries 2014?

A Yes.

Q And Note 15, Costa 2015?

A Yes.

Q And these were two of the studies we discussed earlier; right?

A Yes.

Q So going back to page 4, on the left-hand column, near the bottom, it says, "Because these studies were hampered by small number of participants and substantial risk of selection bias, the long-term effects of hormone treatment on psychosocial health cannot be evaluated. Of note the above studies do not allow the separation of potential effects of psychological intervention independent of hormonal effects."

Do you see that?

A Yes.

Q Do you disagree with this assessment?

A Yes.

Q Do you think their assessment is unreasonable?

MR. STRANGIO: Object to form.

A I think it's incorrect.

Q Is it unreasonable?

MR. STRANGIO: Object to form.

A I don't know what you mean by "unreasonable."

Q Do you think a reasonable psychiatrist could not reach this conclusion?

MR. STRANGIO: Object to form.

A I think it's incorrect.

Q That was not my question. My question was, could a reasonable person reach this conclusion?

A I don't know what you mean by a "reasonable person."

Q Could a reasonable psychiatrist reach this conclusion?

MR. STRANGIO: Object to form.

A What do you mean by a "reasonable psychiatrist"?

Q Okay. Let's turn to page 12.

MR. BARTA: Please scroll to the bottom.

Q Under "Conclusion," it says, "This systematic review of almost 10000 screened abstracts suggests that long-term effects of hormone therapy on psychosocial and somatic health are unknown, except that GnRHa treatment seems to delay bone maturation and gain in bone mineral density."

Do you see that?

A Yes.

Q Do you disagree with this conclusion?

A Again, part of my concern with this study is that

it did not include all of the relevant studies that should have been included. So when they say there are 10,000 screened abstracts, it appears to be missing many studies. So maybe based on only the studies that they look at. But again, also do they define what they mean by long-term?

Q We -- all right. So do you think that this -- if you're looking at de Vries 2014 and Costa 2015, was this conclusion -- is this a reasonable assessment if you were just looking at those two studies?

A De Vries 2014 looks at mean six years after starting pubertal suppression. As I put in my declaration, if you want to put that in context, the FDA used a six-week study of lurasidone for bipolar and depression in children and adolescents to approve that medication. So, you know, it depends on your definition of long-term. I would say the de Vries study, if you want to be precise, followed up about six years.

Q How long are the effects of gender-affirming hormones?

MR. STRANGIO: Object to form.

A What do you mean by "the effects"?

Q How long do the physical changes occasioned by gender-affirming hormones last?

MR. STRANGIO: Object to form.
A It depends on how long you've been taking them and which effect you're referencing.
Q Are some effects lifelong?
MR. STRANGIO: Object to form.
A If you've taken the medications for a sufficient period of time.
MR. BARTA: I'd like to go to the next exhibit as -- introducing as Exhibit 19, the document "Evidence review: Gonadotropin-releasing analogues in children and adolescents with gender dysphoria."
(Deposition Exhibit 19 marked.)
Q Do you see this document?
A Yes.
Q Are you familiar with this document commissioned by the UK National Institute for Health and Care Excellence?
A I think it's come up for another case, so I've reviewed it, but I don't remember it in great detail, other than the fact that it was prepared in 2020 prior to when a lot of this research was published in '19. Similarly, to the paper we were just looking at excluded important studies.
Q Okay. So can we go to page 4, please.
MR. BARTA: Right there, that's fine.

Q So do you see under "Critical outcomes," it says, "The critical outcomes for decision making are impact on gender dysphoria, impact on mental health and quality of life. The quality of evidence for all these outcomes was assessed as very low certainty using modified GRADE."
Do you see that?
A Yes.
Q What is GRADE?
A GRADE is one of several different ways you can assign a level, like excellent -- I don't know exactly what theirs are, but something along the lines of excellent, very good, poor, low quality, depending on different types of study designs. I believe GRADE really has an emphasis on randomized control trials which aren't possible or ethical in this field, so it's not the most informative system to use. I believe it is the one that the Endocrine Society guidelines uses, though.
Q All right. Can you flip to page 42, please. Oh, that's not the page I wanted.
MR. BARTA: Shawn, I think you have the wrong document up. Is this the one titled gonadotropin-releasing -- oh, well. We'll stick with this. You have it as Exhibit 20?

(Discussion held off the record.)
BY MR. BARTA:
Q Are you familiar with this document?
A Yes. It's similar to the other document. I believe there were two non-peer reviewed reviews, one about puberty blockers, which are gonadotropin-releasing hormone analogues. That's this one. The prior one you had up was about gender-affirming hormones.
Q Can you flip to page 40.
MR. BARTA: Scroll down just a little more.
Q So do you see the paragraph where it says, "The studies included in this evidence review are all small, uncontrolled observational studies, which are subject to bias and confounding, and are of very low certainty as assessed using modified GRADE"?
Do you see that sentence?
A Yes. And again, this is a non-peer reviewed article. If it had been peer reviewed, then they would have probably identified the cross-sectional studies that we just discussed that did have -- that were controlled, that compared those who received the treatments to those who did not.
Q Let's flip to page 42, please. Do you see at the

paragraph, the two prospective observational studies, Costa 2015 and de Vries 2011?
A Yes.
Q These are two of the studies you discussed?
A Yes.
Q And I think -- and you -- do you think it's unreasonable to rate these two studies as very low certainty using GRADE?
MR. STRANGIO: Object to form.
A I would have to have the GRADE criteria up in front of me. There are very specific scoring systems with very specific meanings. It's different from the lay meanings of the words.
Q I think we're going to finish with this document and flip to what we have as the next exhibit, which is the previous document we looked at. There we go.
MR. BARTA: Can we get an exhibit number for this, Debbi.
(Deposition Exhibit 20 marked.)
Q So this is -- so I think you mentioned earlier, this is the NICE's review of studies on gender-affirming hormones?
A For adolescents, yes.
Q Can we flip to page 47.

MR. BARTA: Scroll down a little bit more.

Q Do you see in the -- under "Discussion," the second sentence says, "All the studies included in this evidence review are uncontrolled observational studies, which are subject to bias and confounding and were of very low certainty using modified GRADE."

Do you see that?

A Yes.

Q Can we turn to page 40 -- page 50, please.

Do you see under "Conclusion," it says, "The results from 5 observational" -- sorry, "The results from 5 uncontrolled, observational studies (Achille 2020, Allen 2019, Kaltiala 2020, Kuper 2020, de Lara 2020) suggest that, in children and adolescents with gender dysphoria, gender-affirming hormones are likely to improve symptoms of gender dysphoria, and may also improve depression, anxiety, quality of life, suicidality, and psychosocial functioning. The impact of treatment on body image is unclear. All the results were very low certainty."

Do you see that?

A Yes.

Q Is it unreasonable to assess Achille 2020 and Allen

2019 as of very low certainties in GRADE?

MR. STRANGIO: Object to form.

A I would have to have the GRADE criteria up in front of me to analyze that. Again, they're specific and not the same as the lay definitions of the titles that the different levels have.

MR. BARTA: Okay. Can we take this down.

Q So turning to paragraph 19 of your declaration. Let me know when you're there, please.

A I'm there.

Q The first sentence says, "Other than the gender-affirming medical care banned under S.E.A. 480, there are no evidence-based treatments for adolescents with gender dysphoria."

Do you see that?

A Yes.

Q And then you say, "There are no evidence-based psychotherapy protocols that effectively treat gender dysphoria."

Do you see that?

A Yes.

Q Do you consider yourself an expert on psychotherapy?

MR. STRANGIO: Object to form.

A Yes.

Q Do you use psychotherapy in your practice?

MR. STRANGIO: Object to form.

A Yes.

Q How?

A I use various evidence-based psychotherapies, depending on what the patient is experiencing. So if somebody is targeting social anxiety disorder, for instance, I may do cognitive behavioral therapy for social anxiety disorder, which has substantial research to show that it's effective for that condition.

Q Are there evidence-based psychotherapy protocols for depression?

MR. STRANGIO: Object to form.

A Yes.

Q For suicidality?

MR. STRANGIO: Object to form.

A Dialectic behavioral therapy is evidence-based for self-harm and suicidality, yes.

Q For trauma?

MR. STRANGIO: Object to form.

A Do you mean PTSD?

Q For PTSD.

A Yes.

Q And is psychotherapy effective in addressing those

conditions?

MR. STRANGIO: Object to form.

A Sorry, remind me, major depressive disorder, PTSD, and what was the other one?

Q Depression, anxiety, suicidality, PTSD.

A I just want to be more specific of the diagnoses. So depression is not a technical diagnosis, but major depressive disorder, cognitive behavioral therapy is an evidence-based treatment for major depressive disorder. Again, anxiety, there are many different anxiety disorders. But, for instance, cognitive behavioral therapy is evidence-based for social anxiety disorder. And trauma-focused cognitive behavioral therapy is evidence-based for PTSD.

Q If there is a minor who has experienced trauma and also has gender dysphoria, would it be appropriate to treat that minor using a trauma-based psychotherapy protocol?

MR. STRANGIO: Object to form.

A I certainly have patients who both have gender dysphoria and PTSD and have received gender-affirming medical interventions that have helped with their gender dysphoria and separately trauma-focused CBT that have helped with their

symptoms of PTSD.

Q Are you aware of any studies evaluating the effects of psychotherapy on gender dysphoria in minors?

MR. STRANGIO: Object to form.

A Not other than past studies looking at the impact of gender identity conversion efforts which were found to be linked to bad mental health outcomes.

Q Do you think there could be a gender-affirming psychotherapy developed for gender dysphoria?

MR. STRANGIO: Object to form.

A What would that -- I'm not sure what you're describing.

Q Do you think someone could try to develop a gender-affirming psychotherapy for gender dysphoria?

MR. STRANGIO: Object to form.

A What do you mean by "gender-affirming psychotherapy"?

Q Do you think there could be -- do you think that the effects of psychotherapy on gender dysphoria deserve to be researched?

MR. STRANGIO: Object to form.

A I would need you to be more specific about what type of research you're suggesting.

Q Are you aware of any literature that rules out the possibility of developing psychotherapy for gender dysphoria that is effective in reducing distress?

A The only research that I can think of is the research that attempted to push people in gender dysphoria to identify with their sex assigned at birth, and that treatment was not found to be successful based on clinical impression and then based on research found to be associated with suicide attempts and then was subsequently labeled unethical by the American Psychiatric Association.

Q Do you think the literature rules out the possibility of developing a different kind of psychotherapy that is helpful for reducing the symptoms of gender dysphoria?

A I can't think of what that would look like or what that would be.

Q Are you aware of any literature that would rule out the possibility someone could develop it?

MR. STRANGIO: Object to form.

A This is so -- such a vague and hypothetical question. I don't know how to answer.

Q All right. So in looking at paragraph 20, you say, "In the past, some clinicians have described psychotherapeutic strategies that aimed to result in youth with gender dysphoria identifying with their sex at birth."

Do you see that?

A Yes.

Q And then you cite a 2002 study.

Do you see that?

A Yes.

MR. BARTA: Could we bring up Meyer-Bahlburg 2002 as Exhibit 21.

(Deposition Exhibit 21 marked.)

Q Is this the study you mentioned?

A I wouldn't call this a study, but it more describes therapy that aims to push transgender prepubertal children to identify with their sex assigned at birth.

Q I see the first sentence that talks about gender identity disorder. Is that the same as gender dysphoria?

MR. STRANGIO: Object to form.

A It's related but different. So that was the diagnosis in the DSM-IV. There were several problems with that diagnosis. The biggest issue was that one couldn't meet criteria for that diagnosis without identifying as a gender different than their sex assigned at birth. So it could potentially capture cisgender tomboys, for instance, or cisgender boys just with feminine interests, like a cisgender boy who liked playing with dolls or dresses and playing dress-up that, like, obviously those aren't the types of kids that we are thinking about as needing any kind of intervention in the same way that you would for gender dysphoria.

So that diagnosis was changed slightly to highlight the one needed to have a gender identity different from their sex assigned at birth.

Q And then in the last sentence of the abstract, it says, "We conclude this treatment approach holds considerable promise as a cost-effective procedure for families in which both parents are present."

Do you see that?

A Oh, I see. So it had the case series. Yes.

Q And if you could, flip to page 372. So you -- do you label this approach as gender identity conversion?

MR. STRANGIO: Object to form.

A Yes. And also, just to -- I think an important clarification. So in this, this is the only manual where I've ever seen it described in peer reviewed literature, this type of therapy that aims to -- they use the phrase "hasten desistance," but

essentially push someone to identify with their sex assigned at birth. But they're describing it for prepubertal children.

So when they're talking about the families in here that were put through this therapy, it's not the same population that would be considered for gender-affirming medical interventions because they're too young.

Q But how do you define gender identity conversion?

A I use the American Academy of Child and Adolescent Psychiatry's definition, which is essentially any psychotherapy that aims to push a person to identify with their sex assigned at birth.

Q So one component of this therapy was encouraging children who were male to have a stronger relationship with their father.

Would you say that itself is gender identity conversion?

MR. STRANGIO: Object to form.

A No. If you are trying to foster a child to have a stronger relationship with their father and the intention of that is for them to have a strong family relationship, that certainly would not be gender identity conversion efforts.

The gender identity conversion efforts are

defined by the intention. So if your intent is to force the person to identify with their sex assigned at birth and that's why you're doing all the things in therapy, not for another positive beneficial reason, that's when it becomes conversion therapy or conversion effort.

Q Is there a place for open-ended exploration of a person's gender identity?

MR. STRANGIO: Object to form.

A Yes, I do that in my practice frequently.

Q What do some of the techniques look like for that open-ended exploration?

MR. STRANGIO: Object to form.

A Often -- it can be really different for different people, but you sometimes have patients who say that they're unsure about their identity or they want to better understand themselves or they think they might have gender dysphoria or might be trans, but aren't sure. So you, in a nondirective way, provide them with a space and a scaffolding to think about gender identity.

So you might talk about their physical -- how they feel about their physical bodies. You might talk about their relationship to gender roles and expectations. You might talk to them about

experiences of their gender identity that are really hard to put into words. And there can be all different outcomes.

I think I mentioned earlier I work in our eating disorders clinic also. So sometimes I have patients who are trying to figure out, you know, do I have anorexia or do I have gender dysphoria. Is my -- am I restricting my eating because of a gender-related concern or because of my eating disorder or is it both or did one become the other or the other way around.

So you can sit and talk with them through that in a nondirective way to try and better understand themselves.

Q You might try to -- so one technique might be to try to rule out alternative conditions such as anorexia?

MR. STRANGIO: Object to form.

A So that would be different. So there are different types of therapies. So you can be doing a biopsychosocial evaluation for starting a gender-affirming medical intervention, in which case you would be evaluating for other mental health conditions that might be something that they thought was gender dysphoria that's not. Like

differentiating gender dysphoria from body dysmorphic disorder, for instance, that would be part of your biopsychosocial evaluation for starting a gender-affirming medical intervention.

Gender exploratory psychotherapy is a different type of psychotherapy where you're just helping the person explore to understand themselves, not because you're trying to necessarily figure out if they're candidates for gender-affirming medical interventions. So they can be related, but different.

You know, another example would be talking to someone who is maybe trying to figure out if they have gender dysphoria or if this is more of a gender role thing, and that person may finally decide, actually, I do feel quite comfortable with my body and with my male gender identity. I just have gender neutral interests. Like, I really enjoy knitting and dolls and, you know, I'm a boy who likes dolls. I'm not a transgender woman, for instance.

So exploratory psychotherapy can help someone understand that, but it's really important that the way you do that is with prompts and with a framework where you don't have a goal as the

therapist for what the person's gender identity is going to be, but you're really trying to help them understand themselves rather than force a particular narrative on them.

The reason for that is that if the patient is trans and you're trying to force a cisgender identity on them, that that has the risk of instilling a lot of shame and stigma and damaging relationships between the therapist and the patient so that they're not being open and telling you about their authentic experience.

Q So this fundamentally comes down to what is the intent behind it?

A Exactly.

MR. BARTA: I'd like to bring up as Exhibit 22 Turban Beckwith 2020.

(Deposition Exhibit 22 marked.)

Q This is the study you cite in footnote 17 of your declaration; right?

A Yes.

Q And you say it practices termed gender identity conversion efforts have been linked to adverse mental health outcomes?

A Yes.

Q When you say "linked to," do you mean has causation

been established?

A No.

Q What type of study was this 2020 study?

A This is a cross-sectional study.

Q And it's based off the 2015 U.S. Transgender Survey data we discussed earlier?

A Yes.

Q So turning to page 69 of the study. In "Exposures," it says, "The primary exposure of interest was an affirmative response to the binary survey question, 'Did any professional (such as a psychologist, counselor, or religious advisor) try to make you identify only with your sex assigned at birth (in other words, try to stop you from being trans)?"

Do you see that?

A Yes.

Q So this was the key question you're looking at to determine if someone had received what you call conversion therapy?

A Conversion efforts, but yes.

Q And this was a binary response; right? A yes/no?

A Yes. I believe it was a yes/no and then there were follow-up. If you answered yes, there would be follow-up questions asking the age at which that

happened, as well as if it was from a religious professional or a secular professional.

Q Okay. So turning to page 75, under "Strengths and Limitations," so one limitation you discuss is -- you say, "It is possible that those with worse mental health or internalized transphobia may have been more likely to seek out conversion therapy rather than non-GICE therapy, suggesting that conversion efforts themselves were not causative of these poor mental health outcomes."

Do you see that?

A Yes.

Q And then under it, you say, "We have" -- or in the next paragraph, "We also lack the" --

A I do want to say on that one, though, that we did a subgroup analysis, looking at only people who were exposed to conversion efforts before age ten, looking at that prepubertal age group. And when we did that, there was an even stronger association with suicide attempts and presumably someone ten or younger wouldn't seek out conversion therapy by their own decision.

Q Okay. So the next paragraph begins, "We also lack data regarding the degree to which GICE occurred (eg, duration, frequency, and forcefulness of GICE,

as well as what specific modalities were used."

Does GICE here refer to conversion therapy?

A Gender identity conversion efforts.

Q So you don't -- the data wasn't sufficient to tell you anything about the sophistication of the efforts?

A It didn't ask the duration or intensity, but what we -- the point we make in the following sentence is if we assume that these were people reporting mild or infrequent -- you know, the most to one side type, that would be even more concerning, right, if even mild conversion efforts were associated with dramatic (audio interference) suicide attempts, that would make you even more concerned about this practice if even mild ones had that impact (audio interference) severe ones.

Q So is it correct that the data did not distinguish between what an effort by a trained psychiatrist and someone who was just a lay counselor?

MR. STRANGIO: Object to form.

A So we did look at two groups, those where the gender identity conversion effort was from a secular professional, a mental health professional, or a religious advisor, I think was the term. And it didn't make a difference. In both instances,

there was the same strength of association between conversion efforts and suicidality.

Q Did you distinguish between different types of secular professionals?

MR. STRANGIO: Object to form.

A No.

Q And you didn't distinguish between the different approaches secular professionals might have used?

A No.

Q And this study only included people who identified as transgender at the time of data collection; right?

A Correct. Though I would add there's really broad understanding and consensus within the field that there hasn't been any evidence of gender identity conversion efforts being effective despite them being frequently attempted.

Q But we would -- this survey wouldn't capture data from any instances in which it was effective?

MR. STRANGIO: Object to form.

A This survey was only of people who currently identified as trans.

MR. BARTA: So I think we're done with this.

Q So in paragraph 20 of your declaration, you don't -- is this -- this is the only study or peer

reviewed study you cite regarding the effects of gender identity conversion efforts; right?

A It's the only one I cite. I think there is one additional one by Green, et al., that I did not cite.

Q Do you think there is further research needed in this area about the effects of what you term "gender identity conversion efforts"?

MR. STRANGIO: Object to form.

A So gender identity conversion efforts have been labeled based on the consensus and expertise of the members of the American Psychiatric Association, the American Academy of Child and Adolescent Psychiatry, the American Academy of Pediatrics, the American Psychological Associations, all of them have labeled it as unethical and dangerous based on their clinical experience as well as the peer reviewed research that's been published.

So it wouldn't be ethical under any of those major organizations to conduct a study where you prospectively expose people to conversion efforts. If there were data available, of people who were exposed in the past, certainly you could use that data, but you wouldn't be able to collect prospective data.

Q Do you think it would be -- do you think it would -- further research on past data would be useful?

MR. STRANGIO: Object to form.

A I can't think of -- I'm never going to say that more data is not -- more information is always better than less information, and more data is always better than less data. But I can't think of something specific that you would be able to answer with existing data that hasn't been examined. Perhaps you could look at, like, degrees or types to better understand, but it wouldn't -- I don't know that it would really change things in terms of clinical practice.

Q Okay. Looking at paragraph 22 of your declaration. The first sentence reads, "Given the well-documented benefits of gender-affirming medical care outlined above, and the known harms of untreated adolescent gender dysphoria, banning this care is expected to lead to substantial deterioration of mental health for adolescents with gender dysphoria."

Do you see that?

A Yes.

Q Is your conclusion that banning this care is

expected to lead to substantial deterioration based on the benefits you mention and the harms of untreated gender dysphoria?

MR. STRANGIO: Object to form.

A Sorry, could you repeat the question? I didn't understand exactly.

Q Let's -- let me -- you say, "Banning this care is expected to lead to substantial deterioration."

Are there any studies examining what the observed effects of banning this care is?

MR. STRANGIO: Object to form.

A We've seen -- we've gone through studies that looked at people who were able to access the care versus people who weren't able to access the care for various reasons. So we have data showing what happens when people can't access care, and the ban will make it so that people cannot access care. And those who aren't able to access care have worse mental health outcomes than those who are.

Q Are there any studies looking at observed effects of what you term a ban?

MR. STRANGIO: Object to form.

A I'm not aware that any state bans have gone into effect, so we wouldn't have data on that. But we have data that when you take the -- when you can't

access the care, you have worse mental health outcomes, which I think is relevant, though not the same way in which the care is not being accessed.

Q So here you cite Green 2022 in paragraph -- in footnote 13 [sic] for the statement, "For many of these patients, this is likely to include worsening suicidality."

Do you see that?

A Citation 23?

Q Yes.

A Yes.

MR. BARTA: Can you flip over to Exhibit 13, Shawn. Can you go to the first page, please.

Q This is the study you mentioned?

A Yes. I was just saying, the declaration earlier goes through, as we just did, all of the studies on suicidality and gender-affirming medical care. This is just one example of those many studies that we've gone through. And again, if this saves us time, I would not use this study in isolation to draw causal conclusions.

Q Okay.

A It's the full body of literature that's cited throughout the declaration.

Q And in footnote 24, you mentioned a study called

Kidd 2021 or --

MR. BARTA: Shawn, can we bring that up as Exhibit 23.

(Deposition Exhibit 23 marked.)

Q Is this the study you mentioned?

A Yes.

Q And this is a qualitative study of parents of transgender youth; right?

A Yeah, so this study is more meant to show that parents are particularly worried about these legislative bans, but I wouldn't use this study to look at mental health outcomes based on just parent report. You would want all of the many studies that we discussed earlier that used the adolescent report. But this is just meant to illustrate that parents are concerned about the bans.

MR. BARTA: Can we bring up as Exhibit 24 Hughes 2021.

(Deposition Exhibit 24 marked.)

Q Is this the study you mentioned?

A In paragraph 22?

Q Yes.

A Yes. So this is a similar study looking at the perspectives of providers. And again, I wouldn't recommend using data just from providers'

perspectives in that it's important -- I think the more important literature is the literature that we looked at earlier looking at the -- actually collecting data from the patients.

Q And when you say "providers," this is providers who provide gender-affirming medical care; right?

A Yes.

Q So it wouldn't capture providers who do not think the evidence supports gender-affirming medical care?

MR. STRANGIO: Object to form.

A I think it would capture most providers who care for transgender youth.

Q Would it -- all right. So can we draw any conclusions from this study about what the actual impacts of withholding gender-affirming care could be?

MR. STRANGIO: Object to form.

A I wouldn't recommend using this study by itself, but that it is a study by -- I forget if they were physicians or various -- I don't know if they included things like nurse practitioners and other providers. But that licensed medical providers have substantial concerns about this legislation in addition to everything we've discussed already.

Q If there was a study done on practitioners of conversion therapy who said a conversion therapy ban would be harmful, would you believe that study?

MR. STRANGIO: Object to form.

A I would be surprised if there were a study of 103 conversion therapy providers given that that is illegal in much of the United States and labeled unethical by all major medical organizations. There's no evidence that it is effective, and we went through the evidence that it is harmful. So no.

And again, for that reason, taking just a study about qualitative interviews of healthcare providers would not be the only evidence I would rely on, but I do think it's useful to see that all major medical organizations, including the American Medical Association, the American Psychiatric Association, the American Academy of Child and Adolescent Psychiatry, the American Academy of Pediatrics, all of those major medical organizations, in addition to these hundred doctors, have said that they have concerns that these bans, like the one we're discussing, would be dangerous and lead to adverse mental health outcomes for our patients.

MR. BARTA: How about we take a five-minute break here.

And can we get a time check as well from you, Debbi?

THE REPORTER: Yes.

(Recess taken.)

BY MR. BARTA:

Q So I want to go to the next section of your declaration where you talk about adolescents who have experienced gender dysphoria at the onset of puberty rarely come to identify with their assigned sex at birth.

In paragraph 24, you mention, "The suggestion that a majority of transgender minors affected by the ban come to identify with their assigned sex at birth inappropriately relies on studies of gender diverse prepubertal children which have, in the past, shown that many of these children will not grow up to be transgender."

Do you see that?

A Yes.

Q What is the rate at which prepubertal children will not grow up to be transgender?

MR. STRANGIO: Object to form.

A It's a complicated literature. So there are

studies that use the -- studies that you see cited for the false assertion that the majority of trans adolescents are going to grow up to be cisgender are actually studies of prepubertal children who aren't candidates for gender-affirming medical interventions in part historically for this reason who were referred to gender clinics.

But if you look at those studies, a large proportion of those children didn't actually meet criteria for gender identity disorder, which was the diagnosis at the time. So they were likely cisgender boys who had found an interest, like we discussed earlier, or potentially cisgender girls who were tomboys, for the lay term. And then additionally, there are a lot of layers, so --

Q Well, why don't we go and look -- we'll look at those studies in a minute, how about, so -- would that be okay?

A Yeah, but to answer your study about what is the percentage, you kind of have to understand these things to know what that percentage means.

And so the other problem is that gender identity disorder, we talked about earlier, right, that even if you did meet criteria for the diagnosis, you may not have been trans, right. The

kind of kid that would ever even consider wanting a gender-affirming medical intervention. So those studies would say as many as 80 percent of those kids are going to grow up to not be trans, but it's perhaps not surprising because many of them weren't trans to begin with.

More recent studies have looked at kids who actually identify as trans, so Kristina Olson who is at Princeton has a project called -- I believe it's called the Trans Youth Project. So I included (audio interference) from one of her recent papers where they followed those prepubertal children over a period of five years, I believe it was. And let me pull it up. But the vast majority of them continued to identify as transgender.

Q Okay. Well, we'll look at that study in a minute so we can talk more in detail about it. I guess maybe I have a more foundational question, which is can a prepubertal child who identifies as transgender grow up not to be transgender?

MR. STRANGIO: Object to form.

A I have not met such a child. It would also -- it's a really complex question because you have to wonder because there's so much stigma, are they reporting that they're no longer transgender

because it's easier for them to live their life not revealing that to other people. I'll say clinically we -- more what we see are kids who change the language around how they're expressing their gender identity.

So they usually are still falling under that umbrella of trans but may identify as trans masculine and then nonbinary, or nonbinary then trans feminine, things like that. And I think I gave several examples of that in the declaration of when they follow kids who have pubertal suppression, that a small number of them stopped and had some variation along those lines.

Q Do you think it's possible for -- does the literature indicate that it's possible for someone who identifies as trans prepuberty to no longer identify as trans?

MR. STRANGIO: Object to form.

A I'm not familiar with any published literature on that. There -- prepubertal, there have been, kind of like at the case report level, and there was one study that was able to find a hundred people in the entire world who identified as, quote, detransitioning in some way. But detransition, as I outlined in the report, has a really complex

definition that doesn't necessarily mean that your gender identity changed. It could mean that you've stopped gender-affirming medical hormones. It could mean a lot of different things.

Q Do you think someone's gender identity can be different as a child than as an adult?

MR. STRANGIO: Object to form.

A Again, the research that we have is that there is the strong biological basis of our gender identity, right. There's something in our genes, in our brains that determines trans identity. There could be a million reasons that people choose to share that with others or not, and we've also seen what is established in the literature, that the way people ascribe language to that can change over time. So they may identify as trans and then identify as nonbinary.

So depending on your definition of trans, maybe, you know, if you're using trans as a broader umbrella term to mean any identity other than cisgender.

Q Do you think the literature rules out the possibility that someone could have one gender identity as a child and a different gender identity as an adult?

MR. STRANGIO: Object to form.

A I hesitate with any question that says, are you ruling out the possibility of, because, as I said, nothing's ever known with a hundred percent certainty. Everything in medicine research is based on statistics and the data that we have, like could something that has never happened before happen in the future? In a broad theoretical sense, the answer to that will probably always be yes. But it's certainly not a common occurrence, not something that I've experienced in my clinical practice.

Q But you're not aware of any -- you can't cite me a specific study that would rule out the possibility someone could have two different gender identities throughout their lives?

MR. BARTA: Object to form.

A Well, I could provide you with studies that would rule in that people will use different language to ascribe to their gender identity over time. They may identify as trans masculine and then later as nonbinary. So ...

Q But can you cite to me a study that rules out the possibility someone could have two different gender identities over the course of their life?

MR. STRANGIO: Object to form.

A No. I just said people can describe their gender identity in different ways over time. So those are different gender identities, if you will, right, different language that they're using to describe it, transgender, nonbinary.

Q So how would you determine whether someone's language is changing or whether their gender identity is changing?

MR. STRANGIO: Object to form.

A You can only go off of the language they're describing, but nonbinary and transgender are both non-cisgender identities. They're identities that fall under that broader transgender umbrella.

Q Is there any way to predict which prepubertal children will come to have a -- or describe their gender identity differently as adults?

MR. STRANGIO: Object to form.

A The research that was done on that, again, was those studies of kids who were referred to gender clinics, and basically what they found was that if the kids actually met criteria for gender identity disorder or had more severe gender dysphoria, or if they socially transitioned, which is a proxy for them actually being transgender versus not, that

that predicted being trans in the future. So being trans could take being trans in the future is what those studies essentially showed.

Q But are you aware of any literature that specifically identifies whose language -- predictors of whose language will change as an adult?

MR. STRANGIO: Object to form.

A I don't really understand the question.

Q Well, why don't we move to a different topic then.

So I -- so you say pre- -- you distinguish in your declaration between studies of prepubertal children and children who have gender dysphoria at adolescence; right?

MR. STRANGIO: Object to form.

A I differentiate between the developmental phases of children who are still prepubertal children and those who have reached adolescence.

Q What happens at puberty that affects whether someone will continue identifying as transgender into adulthood?

MR. STRANGIO: Object to form.

A So again, there were a million limitations with those studies about prepubertal children that were suggesting that many of them would grow up to

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identify as trans. Even if you -- even if those limitations weren't there, there's always been, for many, many years, broad consensus that once trans youth reach puberty, they're very unlikely to, quote, desist or stop identifying as transgender.

Q What is the cause of that?

MR. STRANGIO: Object to form.

A So I personally think it is that that whole research really wasn't good and that that's possibly also true for prepubertal children.

Q Well, what is that view based on?

MR. STRANGIO: Object to form.

A The many things I just described, that most of the kids in those studies didn't identify as trans. They didn't meet the criteria for gender identity disorder. The gender identity disorder criteria had problems. And when Kristina Olson went back and looked at kids who said they identified as trans, they continued to identify as trans over the five-year follow-up period that she had.

Q Puberty is generally when minors start receiving gender-affirming care; right?

MR. STRANGIO: Object to form.

A Minors are not candidates for any gender-affirming medical interventions until puberty.

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Q Can providing gender-affirming care affect whether someone will persist?

MR. STRANGIO: Object to form.

A There's no evidence that that is the case, and broad clinical experience would say that whether you start treatment or not, that trans identities are unlikely to persist once puberty starts. That's the reason that people like Ken Zucker and Annelou de Vries recommended waiting until puberty to consider those interventions.

Q Can social transition before puberty affect whether someone will persist in identifying as transgender?

A So there was a study by Rae, et al., also from Kristina Olson's group, that looked at that specific question and found that, no, it seems to be that the kids who identify as trans are more likely to socially transition rather than the social transition makes kids identify more strongly as trans.

MR. BARTA: Can we pull up as Exhibit 25 Hembree 2017.

(Deposition Exhibit 25 marked.)

Q Is this the study you cite in footnote 28 of your declaration?

A If you could scroll down, just because there are

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two different Hembrees from two different years.

Yes, this was published prior to that study by Rae, et al., that I just described. So this review wouldn't have known that data.

Q If we can flip to page 3879.

MR. BARTA: Okay, that's great.

Q So under the heading "Evidence," do you see there is a statement towards the end of that paragraph saying, "However, social transition (in addition to GD/gender incongruence) has been found to contribute to the likelihood of persistence"?

A Like I said, this was published before that Rae, et al. study that showed that that is not the case. This was sloppy language on behalf of this 2017 paper. Social transition was found to be associated with being -- with persistence, but that was likely because social transition was a proxy for the kids actually being trans, and they were looking at studies where most of the kids or many of the kids weren't trans.

So socially transitioning, which only a trans kid would do, was predictive of being trans later. But again, this was in 2017, published many years prior to that Rae, et al., study I just described.

Q This language conflicts with the Rae, et al., study you described?

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MR. STRANGIO: Object to form.

A I think I just answered that question.

MR. BARTA: All right. Let's -- we can take this down.

Q In paragraph 24 of your declaration, you state, "Once a transgender youth begins puberty it is rare for them to later identify as" transgender.

A Yes. Well, did you say rare for them to later identify as cisgender?

Q Oh, yes, cisgender.

And in footnote 27 you cite de Vries 2014?

A Yes.

Q Is that a study of persistence?

MR. STRANGIO: Object to form.

A It wasn't designed for that purpose, but none of the adolescents and young adults in that study that they followed regretted their interventions or subsequently identified as cisgender.

Q Did that study -- was that study capable of separating out the effects of gender-affirming medical interventions?

MR. STRANGIO: Object to form.

A No.

MR. BARTA: I'd also like to introduce as

Exhibit 26 Turban 2018. Can you scroll to the next page.

(Deposition Exhibit 26 marked.)

Q Is this the textbook chapter cited in footnote 27?

A Yes.

Q Did this -- in writing this chapter, did you conduct any original research on persistence?

MR. STRANGIO: Object to form.

A This was a review of the literature written by myself, Annelou de Vries, and Ken Zucker, who are both leading experts in the field with very divergent opinions. So it was a review of the literature from the three of us. It's not an original research study, but it cites the bases for all of its statements.

Q Okay. Can we go to page 638. So in the left column, do you see where it says, "Persistence of Gender Dysphoria from Adolescence to Adulthood"?

A Yes.

Q It says, "In contrast to low rates of persistence from childhood into adolescence, it appears that the vast majority of transgender adolescents persist in their transgender identity."

Do you see that?

A Yes. Based on that citation and also the

perspectives of Ken Zucker and Annelou de Vries who run the oldest clinics for trans youth in the world.

Q Okay. So that's footnote 76?

A Yes.

MR. BARTA: Can we flip over to page 643.

Q So I see Note 76 is for Cohen-Kettenis, Transgenderism and Intersexuality in Childhood and Adolescence?

A Yes.

Q So this is the basis for the statement we looked at a moment ago?

MR. STRANGIO: Object to form.

A That's a textbook with a large compilation of data from the Dutch clinic, which is the oldest clinic in the world. And so the basis of that statement is that textbook, as well as the subsequent experience of Ken Zucker and Annelou de Vries from the two clinics that have existed for the longest to treat adolescents and children with gender-related concerns.

Q So I don't -- in Note 76, I don't see you cite a specific page of that textbook; is that right?

A Correct.

Q Do you know what part of the -- sitting here today,

do you know what part of the textbook you were citing?

MR. STRANGIO: Object to form.

A I don't have the textbook in front of me to find the page.

MR. BARTA: Okay. You can take this down.

Q So looking at paragraph 27, you say -- or sorry, paragraph 26 of your declaration, you say, "The utility of 'desistance' studies even for assessing the likelihood that prepubertal children will persist in their transgender identity has been questioned."

Do you see that?

A Due to their -- there's more to the sentence, yes.

Q Yes. Which specific studies do you have in mind here?

A The one that's most frequently cited is Steensma, et al., in the Journal of American Academy of Child and Adolescent Psychiatry.

Q Any other studies?

A There have been several similar studies, but that's the one most frequently cited.

Q That's the one you have in mind here?

A Yeah. I mean, there are several that have been inappropriately used to suggest that most trans

kids are going to change their mind about their trans identity, but that's one of the most commonly cited for that incorrect conclusion.

Q You say that the studies relied on an "outdated diagnosis of 'gender identity disorder in children,' which did not require a child to identify as a sex different than their sex assigned at birth."

Which definition are you referring to?

MR. STRANGIO: Object to form.

A The old DSM-IV diagnosis of gender identity disorder in children.

Q Okay. And the -- and what is the appropriate definition, do you believe?

MR. STRANGIO: Object to form.

A The appropriate definition of what?

Q Of gender dysphoria.

MR. STRANGIO: Object to form.

A That's set out in the DSM-5 Text Revision.

MR. BARTA: Okay. Can we pull up as Exhibit 27 Olson 2016.

(Deposition Exhibit 27 marked.)

Q Is this the article that you cite in Note 30 of your declaration?

A Yes.

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Q Okay. So this is --
MR. BARTA: So can you scroll down further on the page.
Q So it looks like this is discussing three studies on desistance; is that right?
A I'd have to look at the citation list, but it looks like she's citing three of the most cited examples. I don't think it's meant to be an exhaustive list, but there were several studies that had similar methodologies. I would guess one of those is the Steensma study.
Q Do you cite any source in your declaration that examines all the studies that have been done in this area?
MR. STRANGIO: Object to form.
A No.
Q So can you flip to page 156 of this. So do you see in the left-hand column towards the bottom, Olson says, "The only way to draw clear conclusions about the life-course and identity persistence of transgender children is to conduct prospective studies of children who state they are members of the 'other' gender group consistently over time. Studies with these samples can help us to truly answer the question about persistence of 'opposite'

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gender identities."
Do you see that sentence?
A Yes. She subsequently received the MacArthur Genius grant award and started doing that work, and that is the paper that's cited in footnote 31.
Q Okay. Well, let's take a look at that paper.
MR. BARTA: So can you bring up as Exhibit 28 Olson 2022.
(Deposition Exhibit 28 marked.)
Q Is this the paper you cite?
A That is footnote 31.
Q And what type of study is this?
A This is a prospective cohort study.
Q So looking at the page 2, under "Methods," it looks like it followed 317 children; is that right?
A Yes.
Q And all the children had to be between 3 and 12 years of age to be included; is that right?
A Yes.
Q And they had to make a complete binary social transition, including changing their pronouns; right?
A Yes.
Q So this would not include children who did not make a complete transition; right?

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MR. STRANGIO: Object to form.
A A social transition which includes changing name, pronouns, et cetera.
Q So the children included in this had -- so they all socially transitioned?
MR. STRANGIO: Object to form.
A Social transition is a broad term, but it looks like this was defined as they needed to have not adopted new pronouns than those used at birth.
Q Given the age criteria of the study, would this include people who first began identifying as transgender during adolescence?
MR. STRANGIO: Object to form.
A They've not yet reached adolescence, so no.
Q So looking at -- so can this study rule out that social transition contributes to persistence?
MR. STRANGIO: Object to form.
A No, that would be the other study, Rae, et al., that we discussed a few minutes ago.
Q And this -- and also on page 2, under the "Methods" section, the middle column, it says, "This study did not assess whether participants met criteria for the Diagnostic and Statistics Manual of Mental Disorders, Fifth edition, diagnosis of gender dysphoria in children."

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Do you see that?
A Yes.
Q So this study was not applying the current definition for gender dysphoria?
MR. STRANGIO: Object to form.
A So, again, there are two sets of criteria. There's a set of criteria for gender dysphoria in children, which is for prepubertal children. There's a separate set of criteria and a separate diagnosis of gender dysphoria in adolescents and adults, which is what's relevant for gender-affirming medical interventions.
Q So, and this study only looked at the cohort for five years; is that right?
A Correct.
Q Okay. Can you turn to page 6, please. In the left-hand column, it says, "We anticipate continuing to follow this cohort into adolescence and adulthood. This continued follow-up is necessary because it is possible that as more youth move into adolescence and adulthood, their" gender "identities could change."
Do you see that?
MR. STRANGIO: You're not read -- it doesn't say "gender identities," just to clarify for the

record.

MR. BARTA: Sorry. Thank you.

Q Their identities could change.

Do you see that?

A Speaking of this specific cohort, yes, but there's extensive clinical experience from around the world that following puberty, gender identity is not likely to later be cisgender. But again, I think we look back at the study, there may have been, like we discussed earlier, some shifts between, like, binary and nonbinary identities, et cetera. So yeah, I think that's a reasonable statement that they made.

Q So when this study was conducted in 2016, you think it was still an open question about whether gender identity can change?

A I was talking about her specific cohort of kids who have not been followed.

Q Is there any reason why if their gender identity could change, other children's gender identity could not change?

MR. STRANGIO: Object to form. Just to clarify again, this doesn't say gender identities could change, so I just want to make sure we're continuing to refer back to the text as you --

because you had misread it. It says identities could change.

Q Do you think Olson is referring to a gender identity when she says "identities could change"?

MR. STRANGIO: Object to form.

A Potentially.

Q Can you think of any other identity she's referring to?

A I mean, it's such a multidimensional construct of identity, but the paper's about gender identity, so presumably she's talking about gender identity. You can't know for sure because for some reason she didn't say, which is unusual. I think she generally -- right, since the rest of the paper says gender identity, so I'm not sure if she had something else in mind.

Q Well, let's look at the final sentence. She says, "As we already saw, some youth will retransition more than once so the present identity should not be interpreted as final."

Would you say this sentence is referring to gender identity?

A Yes, in that -- but again, that retransition here is describing things like going between using the language of, you know, boy, trans boy, to

nonbinary. You know, still kind of under this trans umbrella that, you know, would meet the identity criterion for a gender dysphoria diagnosis.

Q Okay.

A I believe. Yeah, you know, and again, to the point that there are a million reasons that people could apply new language to this. And as you can read in the declaration, there are many reasons that people will say that they are no longer transgender due to the experiences of stigma.

MR. BARTA: Can we pull up Exhibit 29, Rae 2019.

(Deposition Exhibit 29 marked.)

Q Is this the study you cite in your declaration, footnote 32?

A Yes.

Q So you say that this shows social transition does not alter gender identification or preferences?

MR. STRANGIO: Object to form.

A Yes, you can see at the end of the abstract, "gender identification and preferences may not meaningfully" -- I don't know why they put may not, because in the study they did not -- "meaningfully differ before and after social transition."

Q Turn to page 670, please. So it looks like the participants were recruited through community groups; is that right? The bottom right.

A Yes, I think -- well, the gender-nonconforming and transgender children were recruited through -- oh, she says a wide range of community groups. I think there was also snowball sampling, and then the controls were recruited through a university database.

Q Is this a non-probabilistic sample?

MR. STRANGIO: Object to form.

A Yes.

Q So if we go to -- and then it looks like to the left of that, it says, "An average of two years later we asked their parents whether each child had socially transitioned."

Is this a two-year study?

MR. STRANGIO: Object to form.

A This study is really just looking at if before and after -- you know, this isn't looking at the impact of an intervention long term. It's looking at if the intervention itself changes gender identity. So yeah, they looked a mean two years later.

Q Okay. Can with go to page 679. So under "Limitations," it says, "A primary limitation of

this work is the small sample size."
Do you see that?
A Yes.
Q So we don't know whether their conclusions can be generalized to all transgender youth?
MR. STRANGIO: Object to form.
A That's not what that means.
Q What does it mean?
A So they talk about having a small sample size, which makes it so that you're not as powered, and then they try to adjust for that using these advanced statistical techniques and using a Bayesian approach that allows you to model data with small samples to make better conclusions.
But that's a separate question about whether or not this is a probability sample. As we discussed earlier, the only way you can get a probability sample is to do something like random digit dialing, and it wouldn't be possible without a huge investment in time, calling random phone numbers until you got enough kids to follow to do a study like this.
Q Okay. So I think further down it says, "Finally, as this research was exploratory."
What is exploratory research?

A I think -- can I see the rest of the sentence? I think it finishes at the top of the next page.
So this is basically describing a trend in research that has not fully taken off but is becoming more popular of people registering their exact study protocol before they run their data analyses, so they're just pointing out that they did not do that. And to kind of reassure you that they weren't -- that they were being forthcoming with their results, they examined the data using all these different methods that showed similar results.
MR. STRANGIO: James, I think I have -- well, some of us have time on our end. I don't know --
MR. BARTA: I think we calculated as having ten minutes left.
(Discussion held off the record.)
Q All right. So do you think Rae 2019 rules out that social transition contributes to persistence?
MR. STRANGIO: Object to form.
A I don't know what you mean by "rules out." Whenever you use that term, I think you're trying to ask me to say with a hundred percent certainty, and there's never a situation in medicine or science where something is with a hundred percent

certainty. It's always to a degree of statistical significance that is considered acceptable.
Q What degree of confidence do you think this gives?
A If you want to go to their statistics section we can --
Q Well, we can do that later, given the time.
How about we move to -- so you talk some about regret and cite some studies.
MR. BARTA: Can we bring up as Exhibit 30 Turban Loo 2021.
(Deposition Exhibit 30 marked.)
Q Is this the study that you mentioned in footnote 33 of your declaration?
A Yes.
Q And this is using the USTS data again?
A Yes.
Q And can the conclusions of that data be -- let me reask that.
So this would only capture people who are -- who at the time of data collection identified as transgender?
A The point of the study was to show that among people who currently identify as transgender, a substantial proportion of them had detransitioned at some point in the past and that most of those

reasons were external factors: Stigma, harassment, discrimination.
To highlight the fact that if somebody is detransitioning at one point in time, that doesn't mean they're not going -- that they're not still transgender and not going to transition again in the future since we know, among adult transgender people, many of them have had this experience of detransitioning at some point in the past.
Q Does this study allow us to draw any conclusions about the percentage of people who have identified as transgender, detransitioned, and remained detransitioned?
MR. STRANGIO: Object to form.
A No, that was not the purpose of the study.
Q Okay.
MR. BARTA: I'd like to bring up as Exhibit 31 Wiepjes 2018. Apologies for butchering the name.
A I'm not sure either. I should really ask.
(Deposition Exhibit 31 marked.)
Q Is this a study cited in footnote 4 of your declaration?
A Yes.
Q What did this look at?
A So this is from the Amsterdam clinic. That's the

largest clinic that we've talked about several times that publishes data on their experience of gender-affirming medical care. They treat adolescents as well as adults, so these were data on trends and the prevalence of treatment and regret over, it looks like the period of data collection from 1972 until 2015.

Q Did the population include adults?

A Yes.

Q Was this a non-probabilistic sample?

MR. STRANGIO: Object to form.

A Yes.

Q So I think in paragraph 29 of your declaration you say that "Nearly all adolescents who start pubertal suppression went on to receive gender-affirming hormones."

A Only 1.9 percent of those who started pubertal suppression did not.

Q Do you know whether this study analyzed the reasons for continuing?

MR. STRANGIO: Object to form.

A It detailed the reasons for not continuing.

Q Okay. But it did not -- are you aware of whether it detailed the reasons for continuing?

A This group follows the WPATH standards of care, so

presumably it's because they were medically indicated.

Q Is it possible someone could elect to continue receiving gender-affirming hormones but not be satisfied with their care?

MR. STRANGIO: Object to form.

A I don't know why they would do that, but it would be possible that they could.

Q On page -- turning to page 4, please. Actually, I am having trouble finding the passage I'm wanting to look at.

So can we turn to page 8. Page 8, please. Right above "Conclusions," it said, "Although transgender people receive lifelong care, a large group (36 percent) did not return to our clinic after several years of treatment."

Do you see that?

A Sorry, where are you looking?

Q Right above "Conclusions." "Although transgender people receive lifelong care."

A Yes.

Q So this study wouldn't allow us to know the reasons why 36 percent stopped receiving care?

A I don't know that you would know that they stopped receiving care anywhere, but they stopped receiving

care in this clinic, and it -- we can't know why.

MR. BARTA: Can we bring up as Exhibit 32 Brook 2020.

(Deposition Exhibit 32 marked.)

MR. STRANGIO: Just two minutes for this exhibit.

BY MR. BARTA:

Q Is this what you cite in footnote 35?

A Yes.

Q Is this a -- this looks at another study of Dutch patients; right?

A Yes.

Q So non-probabilistic sample?

A Yes.

Q And on page 2613, under "Participants," when it's listing people who are excluded, do you see "Not included in the study were children," and then it goes on to say that "that did not wish hormonal treatment."

Do you see that?

A I'm seeing not included in the study were children and adolescents in whom gender dysphoria was not diagnosed, is that what you're talking about?

Q Yes. And the sentence continues to list other groups that were excluded, one of which is "that

did not wish hormonal treatment"?

A Yes.

Q And another group is those who had stopped to attend appointments?

A I presume they mean had stopped attending appointments, but yes.

Q Do you -- how long is the median -- do you know what the literature suggests the median time to experience regret is?

MR. STRANGIO: Object to form.

A No. I don't have that number in front of me.

Q Do you know if it's measured in months?

MR. STRANGIO: Object to form. And also I think we're getting close to time.

A Yeah, I'm not aware of reliable numbers on that. I think there was one internet recruited study that I don't have the details of.

Q Okay. So is it -- if someone stops continuing gender-affirming care, do you think it's more likely than not that they -- that there's going to be higher odds that they regret the care than someone who elects to continue?

MR. STRANGIO: Object to form. I think we're at time. Debbi, where are we?

(Discussion held off the record.)

MR. STRANGIO: All right. So let's end there.
MR. BARTA: Chase, can we get an answer to this since we had some technical difficulties on your end that cost us some time?
MR. STRANGIO: Yes, yes. Yes, we can get an answer to this one, and then let's stop it after that.
MR. BARTA: Maybe, yes, can I -- how about I reask it so we're all on the same page?
MR. STRANGIO: Yes, I think that's fair now because I've lost all track. I hope you can find it in your mind again.

BY MR. BARTA:

Q Do you think the odds of regret are going to be higher among people who stop receiving gender-affirming care compared to those who elect to continue receiving gender-affirming care?

MR. STRANGIO: Object to form.

A Yes, but that doesn't mean that -- that doesn't tell you anything about the percentage of people who discontinue care, who would experience regret, just that the people who are continuing with care, it's very unlikely that they regret it because they're still taking it.

MR. BARTA: Okay. Anything from you, Chase?

MR. STRANGIO: I just have, I promise, two questions.

EXAMINATION

BY MR. STRANGIO:

Q So you were asked -- I'm going to look at the Zoom. You were asked Dr. Turban about care in the United Kingdom based on some reports. To your knowledge is care currently banned in the United Kingdom?

A My understanding is that it is not banned, but that they're restructuring care so that care is administered in several clinics instead of one centralized clinic that had a very long waitlist.

Q And what about care in any Scandinavian countries, is it banned to your knowledge?

A No.

Q And earlier you were asked, and recently any -- about persistence, and at some point you said that -- that adolescents are unlikely to persist in their transgender identity once puberty begins. Is that what you meant?

A I misspoke. I should have said -- I probably meant they're unlikely to desist once puberty begins.

MR. STRANGIO: Great. Thank you. That's it for me.

MR. BARTA: I have one clarifying question on that.

EXAMINATION

BY MR. BARTA:

Q Do you consider a ban on gender-affirming care with exceptions for research to be a ban?

MR. STRANGIO: Object to form.

A No.

MR. BARTA: Okay.

A That sounds like just making specific guidelines for how you administer the care.

MR. BARTA: Okay. That's it for me.

MR. STRANGIO: So Debbi, we can have you send it to Ken on our end. And I think -- James, I think you guys have specific dates you want it by, and I think we're on the same page.

MR. BARTA: I take it those have been communicated to you, Debbi?

THE REPORTER: I have it for next Wednesday delivery.

MR. BARTA: Yes, that sounds right. Thank you. A rough as well.

(The deposition concluded at 8:14 p.m.)

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

K.C., ET AL.,)
)
Plaintiffs,)
)
-v-) CASE NO.
) 1:23-cv-00595-JPH-KMB
THE INDIVIDUAL MEMBERS OF)
THE MEDICAL LICENSING BOARD)
OF INDIANA, in their official)
capacities, et al.,)
)
Defendants.)

Job No. 181269

I, JACK TURBAN, M.D., MHS, state that I have read the foregoing transcript of the testimony given by me at my deposition on May 19, 2023, and that said transcript constitutes a true and correct record of the testimony given by me at said deposition except as I have so indicated on the errata sheets provided herein.

_____
JACK TURBAN, M.D., MHS

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STATE OF INDIANA
COUNTY OF HENDRICKS

I, Debbi S. Austin, a Notary Public in and for said county and state, do hereby certify that the deponent herein was by me first duly sworn to tell the truth, the whole truth, and nothing but the truth in the aforementioned matter;

That the foregoing deposition was taken on behalf of the Defendants; that said deposition was taken at the time and place heretofore mentioned between 12:01 p.m. and 8:14 p.m.;

That said deposition was taken down in stenograph notes and afterwards reduced to typewriting under my direction; and that the typewritten transcript is a true record of the testimony given by said deponent;

And thereafter presented to said witness for signature; that this certificate does not purport to acknowledge or verify the signature hereto of the deponent.

I do further certify that I am a disinterested person in this cause of action; that I am not a relative of the attorneys for any of the parties.

IN WITNESS WHEREOF, I have hereunto set my

hand and affixed my notarial seal this 24th day of May, 2023.

My Commission Expires:
July 13, 2023

Job No. 181269

C